MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

TECHNICAL SPECIFICATION

EE&QA - 961

Appendix C

Drawings and Manuals

ISSUED: **September 15, 2023**

REVISION: **1**

1-16 Torque List

The Table 1-10 lists the standard torque that should be applied to the related bolts/nuts if no different specified in the maintenance procedures.

Table 1-10 Standard Torque List

THREADING (inch)	BOLT OR NUT WRENCH SIZE (inch)	TORQUE					
		UNSHIELDED OR ZINK PLATED		CADMIUM PLATED		STAINLESS STEEL	
		ft-lb	Nm	ft-lb	Nm	ft-lb	Nm
5/16	½	10.10	13.74	7.90	10.74	6.50	8.84
3/8	9/16	18.00	24.48	14.50	19.72	10.03	14.01
7/16	5/8	29.00	39.44	21.50	29.24	16.60	22.58
1/2	3/4	43.50	59.16	36.00	48.96	24.80	33.73
5/8	15/16	87.00	118.32	68.00	92.48	49.70	67.59
3/4	1 1/8	159.00	216.24	126.50	172.04	90.80	123.49
7/8	1 5/16	255.50	347.48	202.50	275.40	146.00	198.56
1	1 1/2	383.50	521.56	307.50	418.20	219.00	297.84

SECTION 2

CAR BODY

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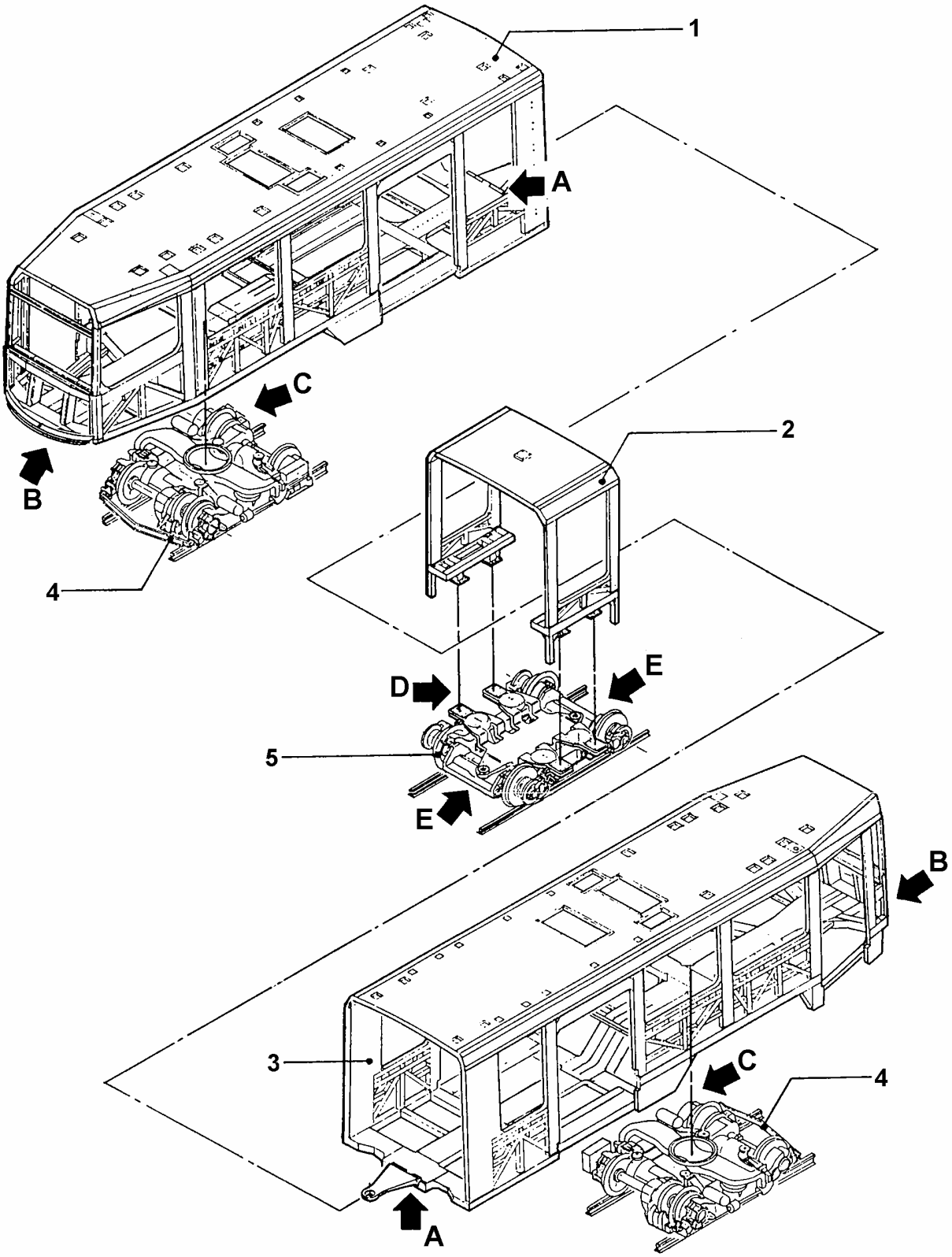


Figure 2-1 Carbody Structure Assy (Sheet 1 of 6)

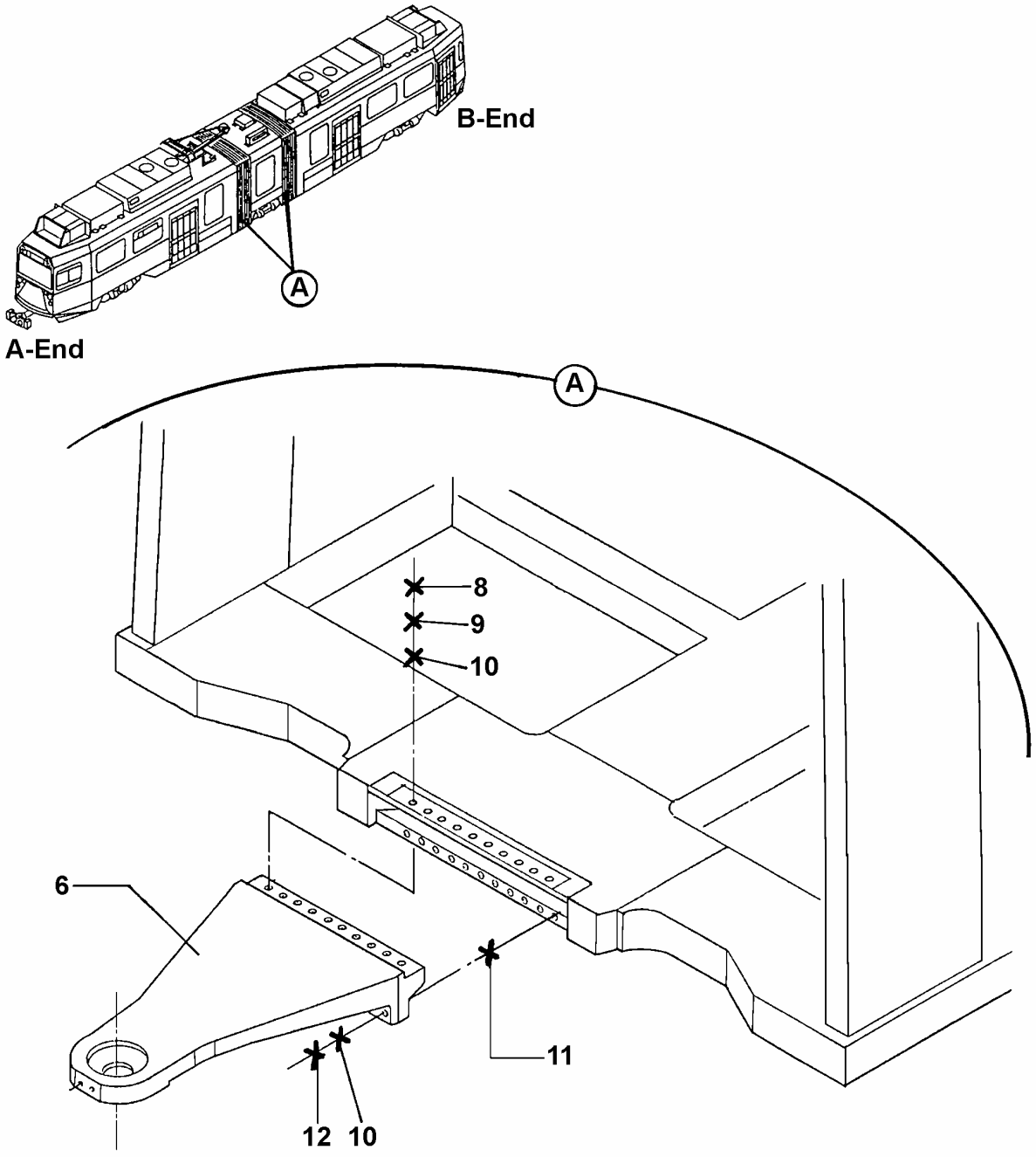


Figure 2-1 Carbody Structure Assy (Sheet 2 of 6)

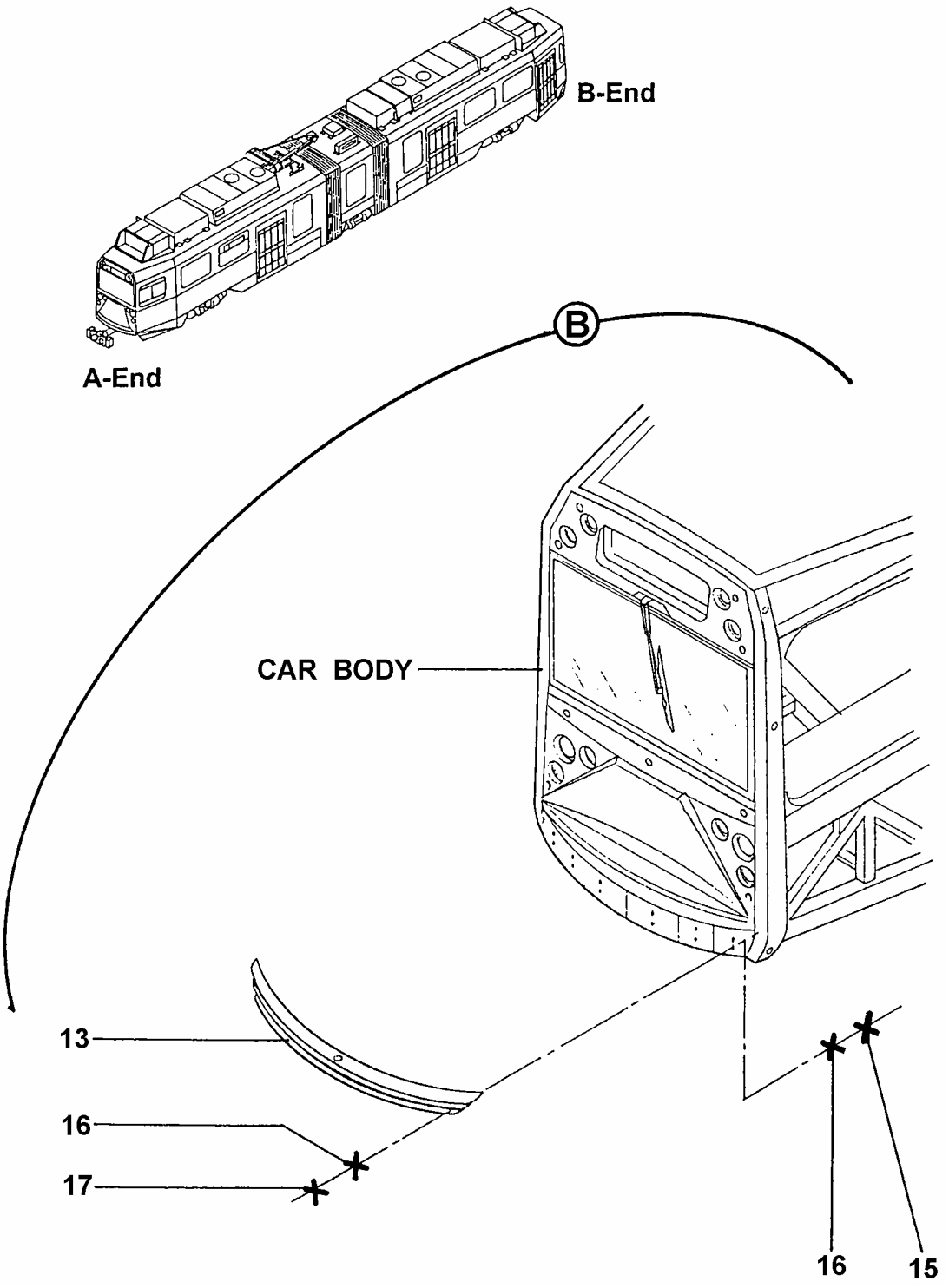
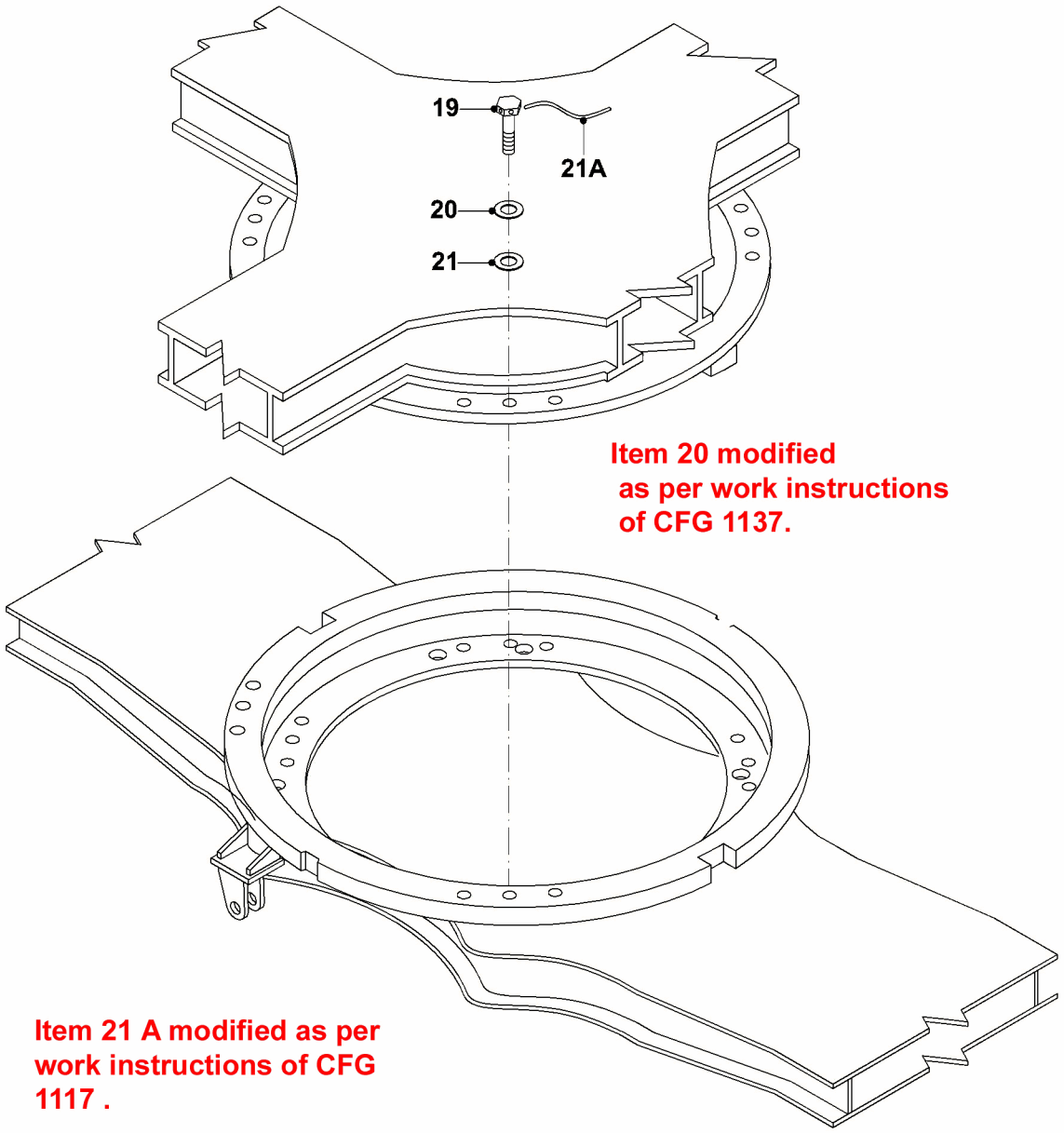


Figure 2-1 Carbody Structure Assy (Sheet 3 of 6)



DETAIL C

Figure 2-1 Carbody Structure Assy (Sheet 4 of 6)

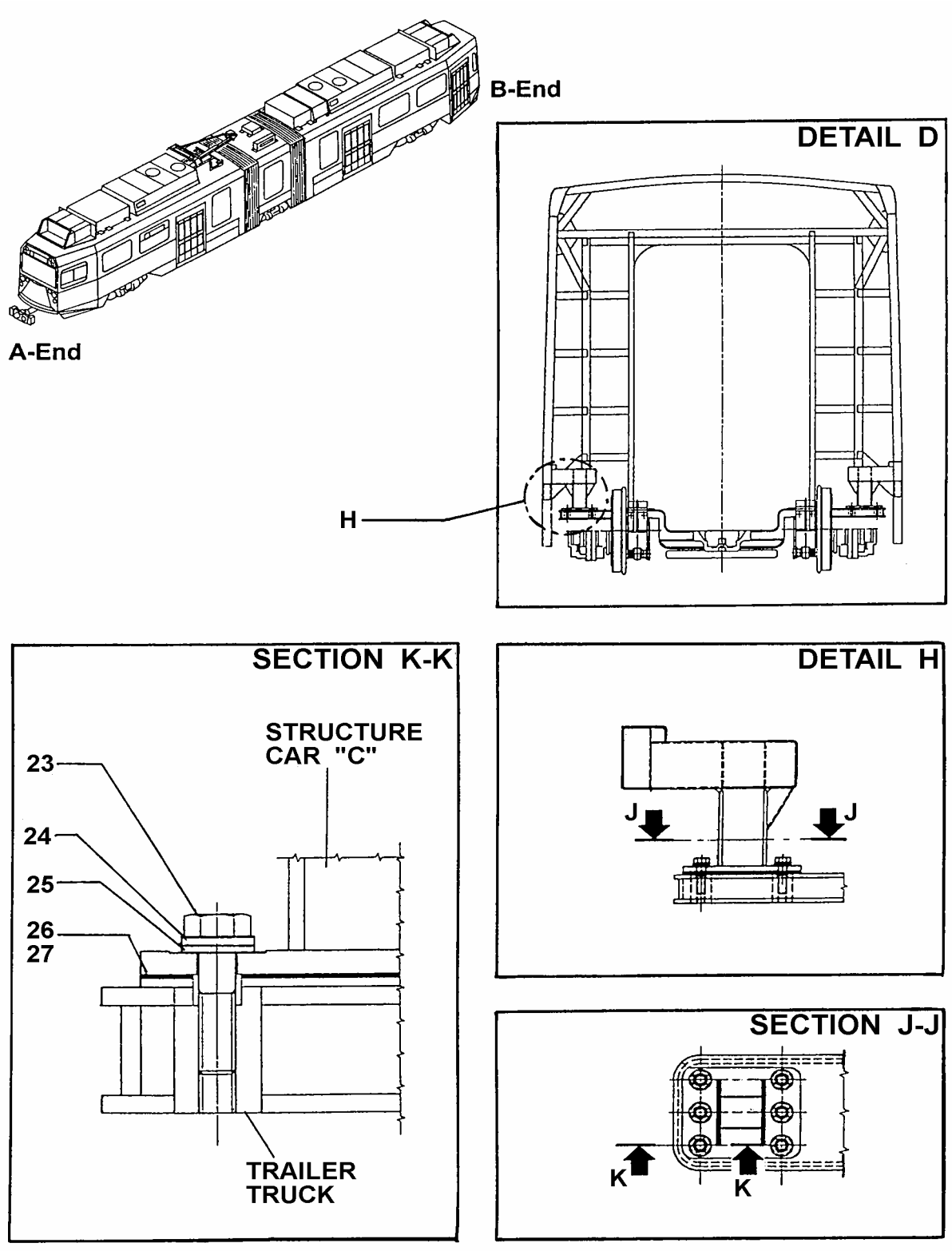
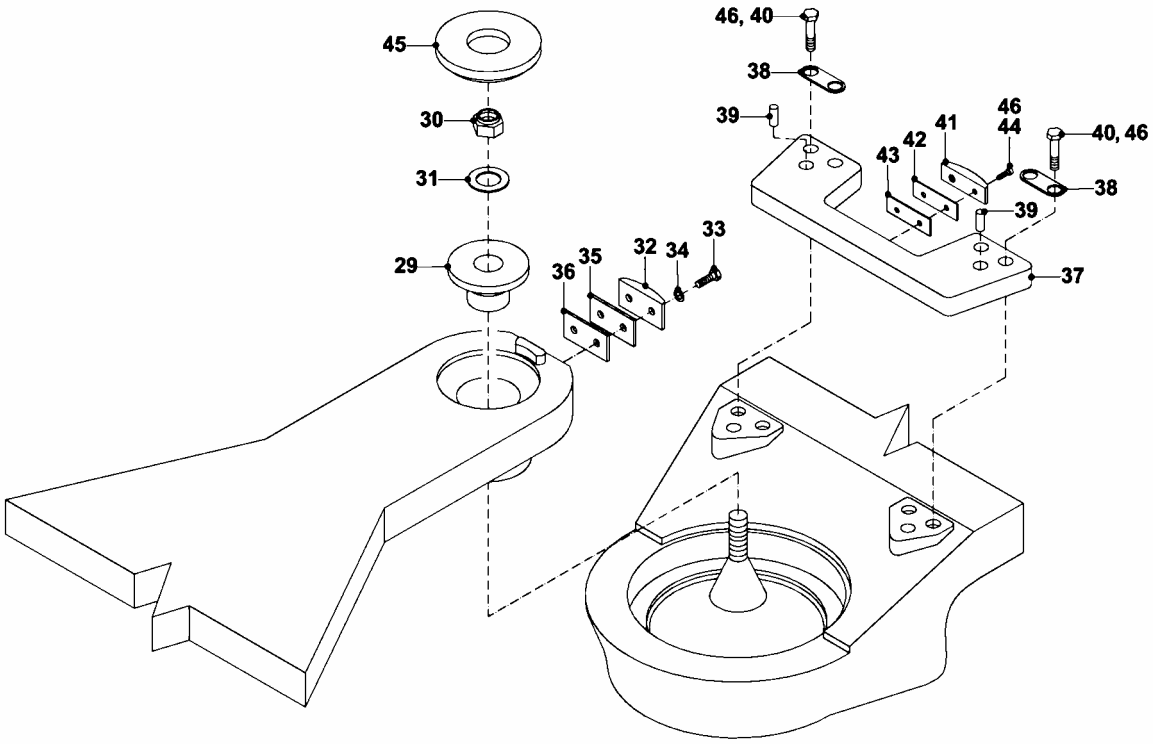


Figure 2-1 Carbody Structure Assy (Sheet 5 of 6)



DETAIL E

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Carbody Structure Assy (Fig. 2-1)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-001-	R12300000	R12300000	A0185	CARBODY STRUCTURE ASSY		EA	1
1	R12300001	R12300001	A0185	.'A' BODY SECTION ASSY		EA	1
2	R12300003	R12300003	A0185	.'C' BODY SECTION ASSY		EA	1
3	R12300002	R12300002	A0185	.'B' BODY SECTION ASSY		EA	1
4	J35200000	J35200000	A0185	.MOTOR TRUCK ASSY - SEE FIG. 10-2 FOR DETAIL		EA	1
5	J36200000	J36200000	A0185	TRAILER TRUCK ASSY-SEE FIG. 10-18 FOR DETAIL		EA	1
6	R12310650	R12310650	A0185	.ARTICULATION SUPPORT		EA	2
7	R12310655	R12310655	A0185	.ARTICULATION SUPPORT INSTALLATION -(N.I.)		EA	1
8	R123106551	7/8x2 STC 503 - A	Z9009	..BOLT, HSTR HEX - 7/8x2 STC 503 - TYPE A STC 503 - ATT.PT		EA	20
9	R123106552	0.87x0.23 STC 536-89	Z9009	..WASHER, CONICAL SPRING - 0.87x0.23 STC 536-89 - ATT.PT		EA	20
10	R123106553	7/8 STC 502 - N	Z9009	..WASHER, HSTR PLAIN - 7/8 STC 502 - TYPE N STC 502 - ATT.PT		EA	40
11	R12310656	R12310656	A0185	..STUD		EA	20
12	R123106554	7/8 STC 512-N	Z9009	..NUT, SELF-LOCKING - 7/8 STC 512-TYPE N STC 512 - ATT.PT		EA	20
13	R12310660	R12310660	A0185	.ANTICLIMBER		EA	2
14	R12310665	R12310665	A0185	.ANTICLIMBER INSTALLATION - (N.I.)		EA	1
15	R123106652	3/4 STC 512-N	Z9009	..NUT, SELF-LOCKING - 3/4 STC 512-TYPE N STC 512 - ATT.PT		EA	24
16	R123106653	3/4 STC 502 - N	Z9009	..WASHER, HSTR PLAIN - 3/4 STC 502 - TYPE N STC 502 - ATT.PT		EA	48
17	R123106654	3/4x2-1/4 STC 507-N	Z9009	..BOLT, HEX - 3/4x2-1/4 STC 507 - TYPE N STC 507 - ATT.PT		EA	24
18	R12252760	R12252760	A0185	.CARBODY/MOTOR TRUCK CONNECTION-(N.I.)		EA	1
19	R122527601	5/8x3-1/2 STC 503-A	Z9009	..BOLT, HSTR HEX - 5/8X3-1/2 STC 503 - TYPE A STC 503 - ATT.PT		EA	24
20	9294M13	Mc Master Carr 9294M13		Washer 17-4 ph SS		EA	24
21	R122527603	5/8 STC 502 - N	Z9009	..WASHER, HSTR PLAIN - 5/8 STC 502 - TYPE N STC 502 - ATT.PT		EA	24
21A	R12252762	ø 1.31 (ø.051 in) UNI 3213	Z9009	ø 1.31 (ø.051 in) UNI 3213 STAINLESS STEEL.WIRE -TYPE 304		EA	AR
22	R12252750	R12252750	A0185	.CARBODY/TRAILER TRUCK CONNECTION - (N.I.)		EA	1
23	R122527501	3/4x3 STC 507 - N	Z9009	..BOLT, HEX - 3/4x3 STC 507 - TYPE N STC 507 - ATT.PT		EA	24
24	R122527502	0.78x0.23 STC 536-89	Z9009	..WASHER, CONICAL SPRING - 0.78x0.23 STC 536-89 - ATT.PT		EA	24
25	R122527503	3/4 STC 502 - N	Z9009	..WASHER, HSTR PLAIN - 3/4 STC 502 - TYPE N STC 502 - ATT.PT		EA	24
26	R12252753	R12252753	A0185	..SHIM - THK 0.02 - STL 430C UNI N10025		EA	48
27	R12252752	R12252752	A0185	..SHIM - THK 0.04 - STL 430C UNI N10025		EA	48
28	R12252770	R12252770	A0185	.ARTICULATION ASSEMBLY - (N.I.)		EA	1
29	R12252771	R12252771	A0185	..STOP, END - THK 1.77 - STL 570D1 UNI N10025		EA	2
30	R122527701	3/4 STC 512-N	Z9009	..NUT, SELF-LOCKING - 3/4 STC 512-TYPE N STC 512 - ATT.PT		EA	2

Carbody Structure Assy (Fig. 2-1)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-001-31	R122527702	3/4 STC 502 - N	Z9009	..WASHER, HSTR PLAIN - 3/4 - ATT.PT STC 502 - TYPE N STC 502		EA	2
32	R12252772	R12252772	A0185	..STOP, END - THK 0.98 - STL 570D1 UNI N10025		EA	2
33	R122527703	1/4x3/4 STC 507-N	Z9009	..BOLT, HEX - 1/4x3/4 STC 507 - - ATT.PT TYPE N STC 507		EA	4
34	R122527704	0.31x0.07 STC 536-89	Z9009	..WASHER, CONICAL SPRING - - ATT.PT 0.31x0.07 STC 536-89		EA	4
35	R12252774	R12252774	A0185	..SHIM - THK 0.02 - STL 430C UNI N10025		EA	2
36	R12252773	R12252773	A0185	..SHIM - THK 0.04 - STL 430C UNI N10025		EA	2
37	J36252785	J36252785	A0185	..PLATE		EA	2
38	J36252793	J36252793	A0185	..PLATE		EA	2
39	R122527709	20x40 mm UNI 28735	Z9009	..PIN - 20x40 mm UNI 28735		EA	4
40	R122527706	3/4x2-3/4 STC 507 - N	Z9009	..BOLT, HEX - 3/4x2-3/4 STC 507 - ATT.PT - TYPE N STC 507		EA	8
41	J36252788	J36252788	A0185	..END STOP, LATERAL		EA	2
42	J36252790	J36252790	A0185	..SHIM		EA	4
43	J36252791	J36252791	A0185	..SHIM		EA	2
44	R122527708	5/16x7/8 STC 511 - N	Z9009	..SCREW, HEX SOCKET HD - ATT.PT CAP - 5/16x7/8 STC 511 - TYPE N STC 511		EA	4
45	R12252777	R12252777	A0185	..PLUG		EA	2
46	R1225277010	243	E0112	..ADHESIVE, THREAD LOCKING -TYPE 243			AR

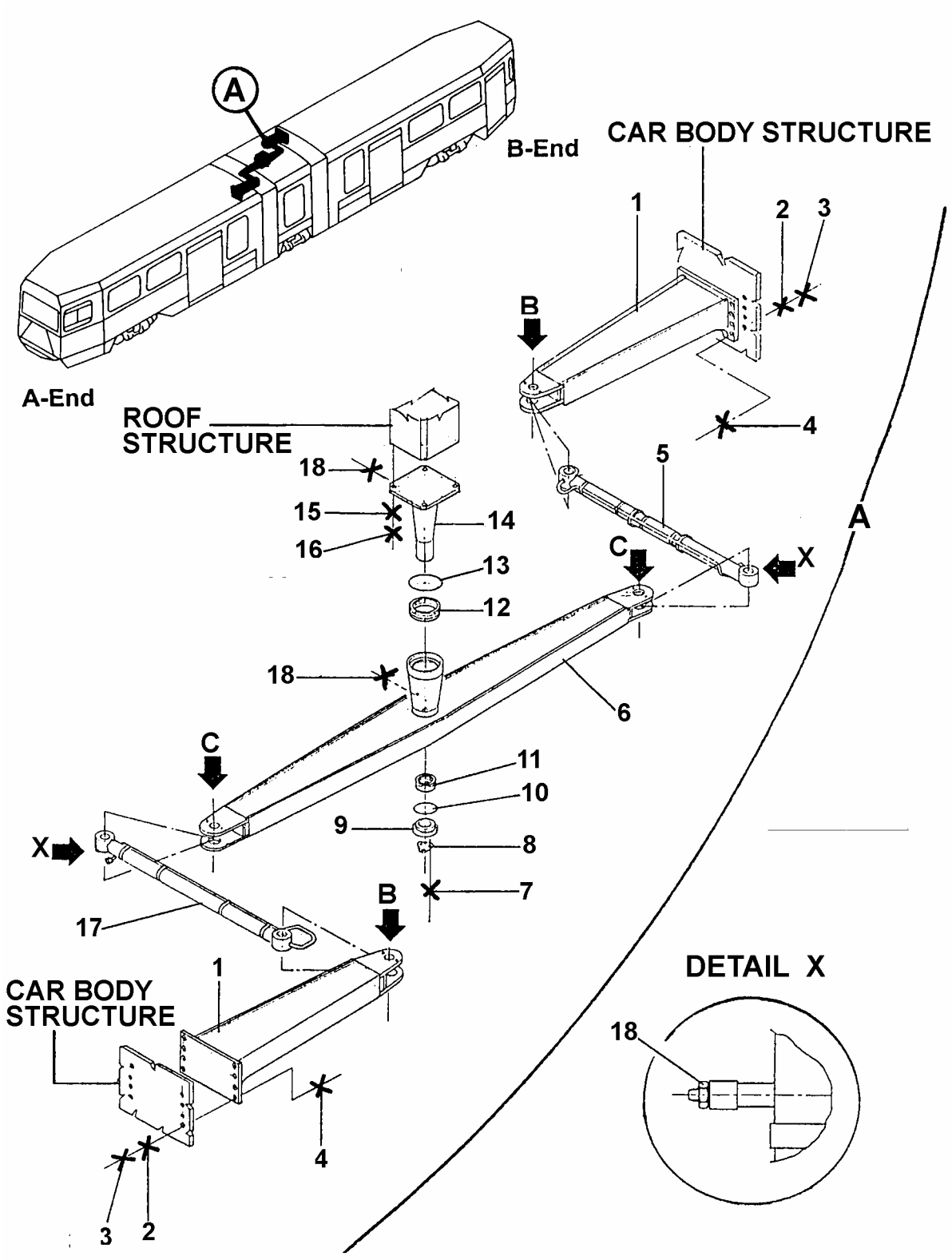
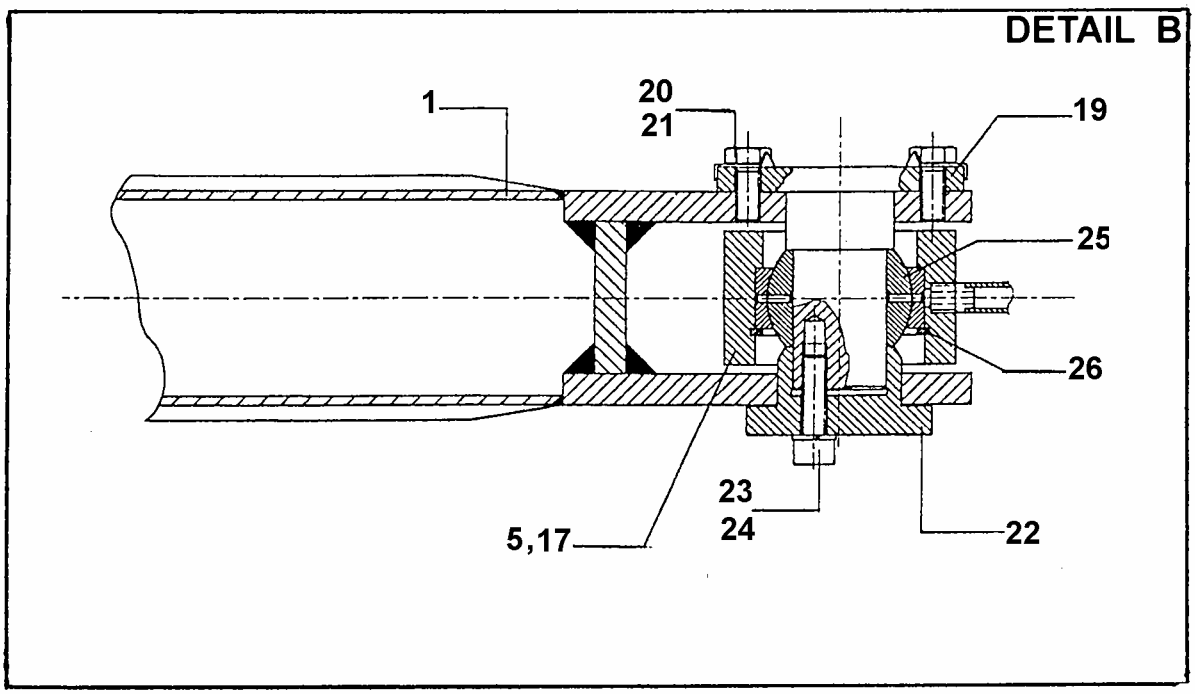


Figure 2-2 Upper Linkage Assy (Sheet 1 of 2)



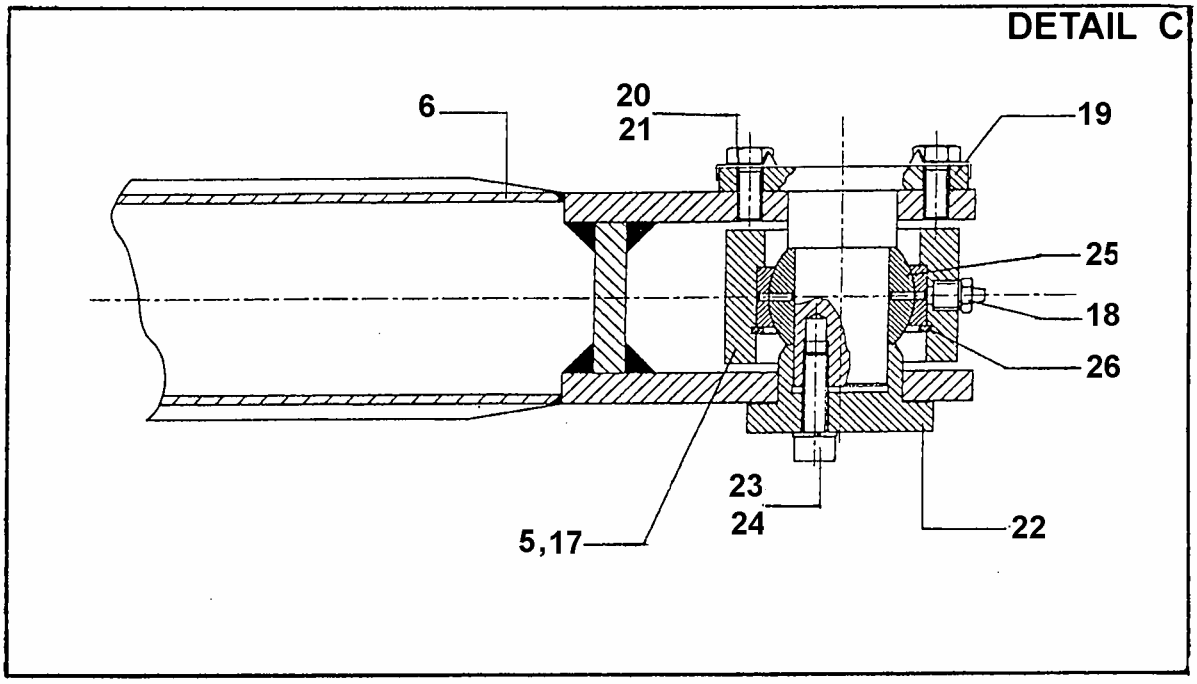


Figure 2-2 Upper Linkage Assy (Sheet 2 of 2)

Upper Linkage Assy (Fig. 2-2)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-002-	R12375600	R12375600	A0185	UPPER LINKAGE ASSY		EA	1
1	R12375618	R12375618	A0185	.MOUNTING SUPPORT		EA	2
2	R12375625	R12375625	A0185	.PLATE, SAFETY		EA	8
3	R1237560014	5/8-11 UNCANSI B18.2.2aS	Z9009	.NUT, HEX - 5/8-11 UNC ANSI - ATT.PT B18.2.2-SSTLAISI304		EA	16
4	R1237560013	5/8-11 UNCx2 ANSI B18.2.1aS	Z9009	.BOLT, HEX - 5/8-11 UNCx2 ANSI - ATT.PT B18.2.1 -SSTLAISI304		EA	16
5	R12375660	R12375660	A0185	.CONNECTING ROD		EA	1
6	R12375601	R12375601	A0185	.SADDLE		EA	1
7	R123756005	3/8-16 UNCx1 ANSI B18.2.1aS	Z9009	.BOLT, HEX - 3/8-16 UNCx1 ANSI - ATT.PT B18.2.1 -SSTLAISI304		EA	3
8	R12375657	R12375657	A0185	.PLATE, SAFETY		EA	1
9	R12375656	R12375656	A0185	.CAP		EA	1
10	R123756004	R123756004	A0185	.RING, SEALING		EA	1
11	R12375633	R12375633	A0185	.BUSHING, LOWER		EA	1
12	R12375635	R12375635	A0185	.BUSHING, UPPER		EA	1
13	R123756003	R123756003	A0185	.RING, SEALING		EA	1
14	R12375645	R12375645	A0185	.PIN		EA	1
15	R123756002	17 mm UNI 6601-69	Z9009	.WASHER, SAFETY -17 mm UNI 6601-69		EA	4
16	R123756001	5/8-11 UNCx1 ANSI B18.2.1aS	Z9009	.BOLT, HEX - 5/8-11 UNCx1 ANSI - ATT.PT B18.2.1 -SSTLAISI304		EA	4
17	R12375611	R12375611	A0185	.CONNECTING ROD		EA	1
18	R123756006	J534 SAE	Z9009	.GREASER - J534 SAE		EA	6
19	R12375640	R12375640	A0185	.PIN		EA	4
20	R123756009	5/16-18 UNCx3/4 ANSI	Z9009	.BOLT, HEX - 5/16-18 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	8
21	R1237560010	8.4 mm UNI 6601-69	Z9009	.WASHER, SAFETY - 8.4 mm UNI 6601-69		EA	8
22	R12375628	R12375628	A0185	.COVER		EA	4
23	R123756007	5/16-18 UNCx1 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - 5/16-18 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	12
24	R123756008	5/16 ANSI B27.2-S	Z9009	.WASHER, PLAIN - 5/16 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	12
25	R1237560011	GEH 30 ES-2RS	E0056	.ARTICULATION, SPHERICAL		EA	4
26	R1237560012	UNI 7437-55	Z9009	.RING, SPRING - UNI 7437-55		EA	4

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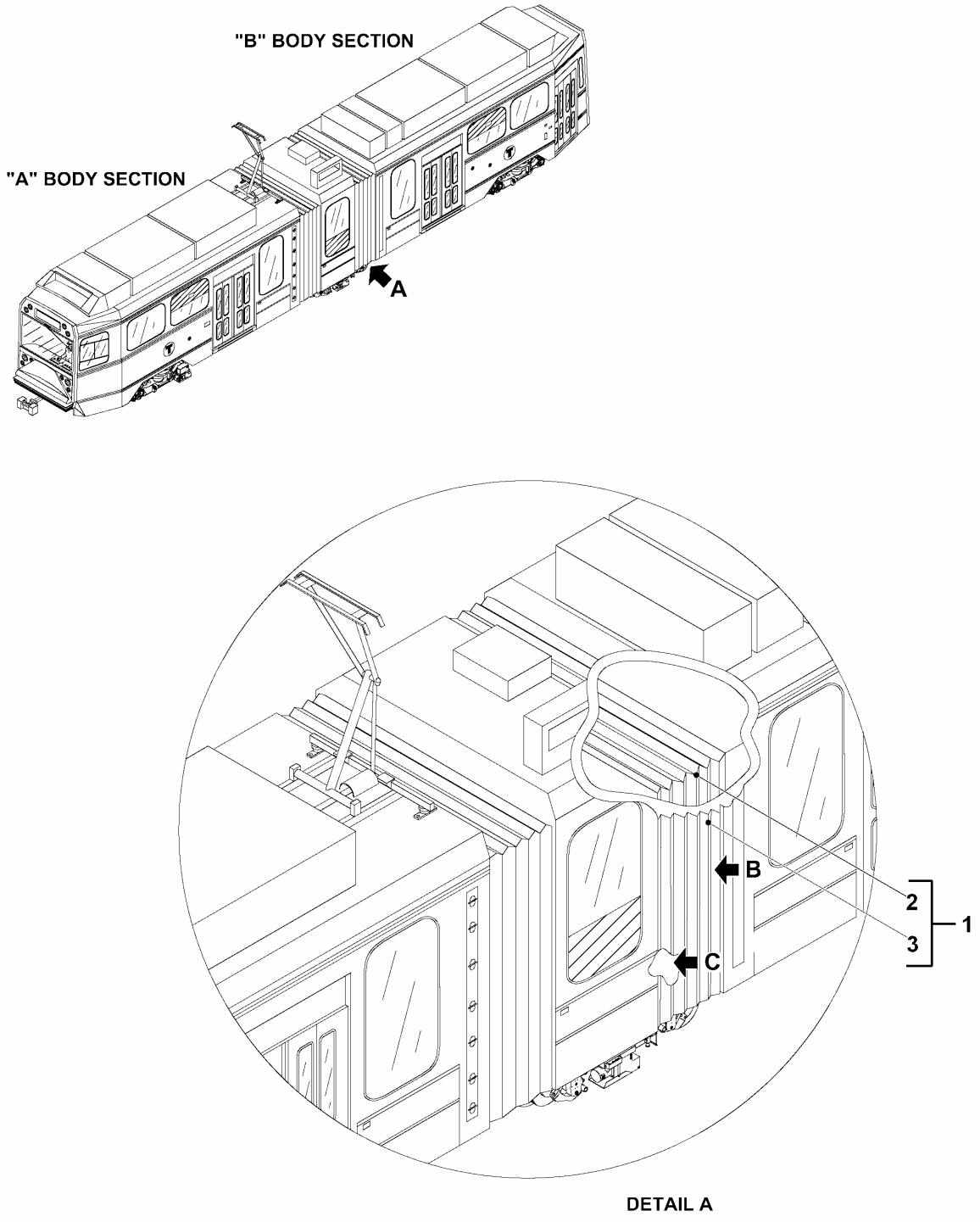

Figure 2-3 Bellows Layout (Sheet 1 of 2)

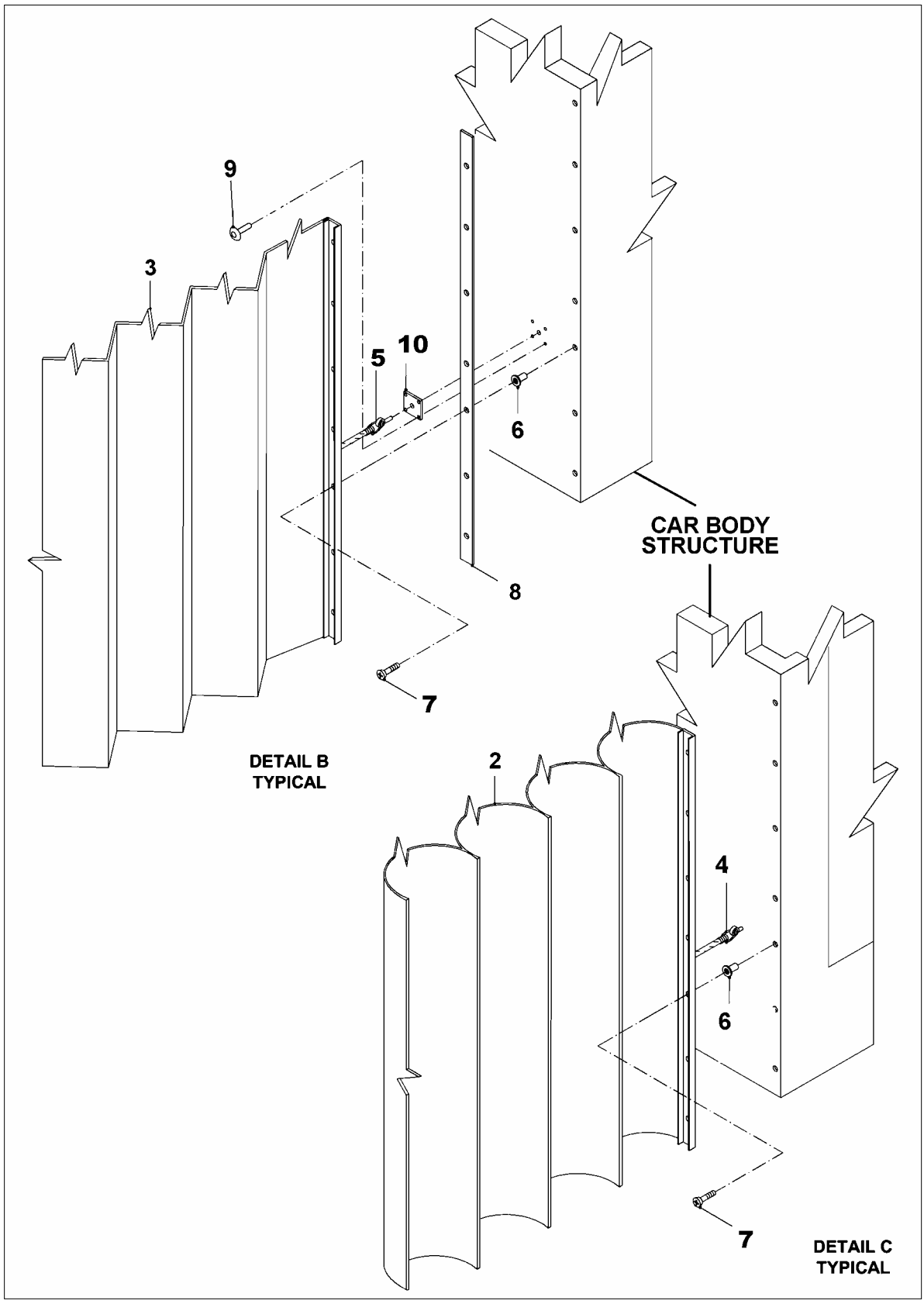

Figure 2-3 Bellows Layout (Sheet 2 of 2)

Bellows Layout (Fig. 2-3)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-003-	R12375700	R12375700	A0185	BELLOWS LAYOUT		EA	1
1	R12375710	041103539	04423	.BELLOWS ASSY		EA	2
2	041103663	041103663	04023	..INNER BELLOW (BELLOW BRUSH SEALS INCLUDED)		EA	1
3	041103662	041103662	04423	..OUTER BELLOW			1
4	04110365800	04110365800	04023	BELLOW SPRING, INNER		EA	4
5	04110365700	04110365700	04423	BELLOW SPRING, OUTER		EA	2
6	R123757003	FW88-U0842	F1525	.RIVET NUT-5/16		EA	280
7	R123757002	5/16x3/4	Z9009	.SCREW, HEX SOCKET HD - - ATT.PT 5/16x3/4-SSTLAISI 384		EA	280
8	R12375702	R12375702	A0185	.GASKET -1.57x0.19 - ATT.PT		FT	84
9	R123757001	SEALTAC 6-10	Z9009	.RIVET-SEALTAC 6-10-AISI - ATT.PT 316		EA	16
10	R12375705	R12375705	A0185	.PLATE -1.97x1.97x0.16 - AISI 304		EA	4
11	R12375703	TYPE 3525 OR EQIVALENT		SEALING (DOW CORNING TYPE 3525 OR EQUIVALENT) (N.I)			AR

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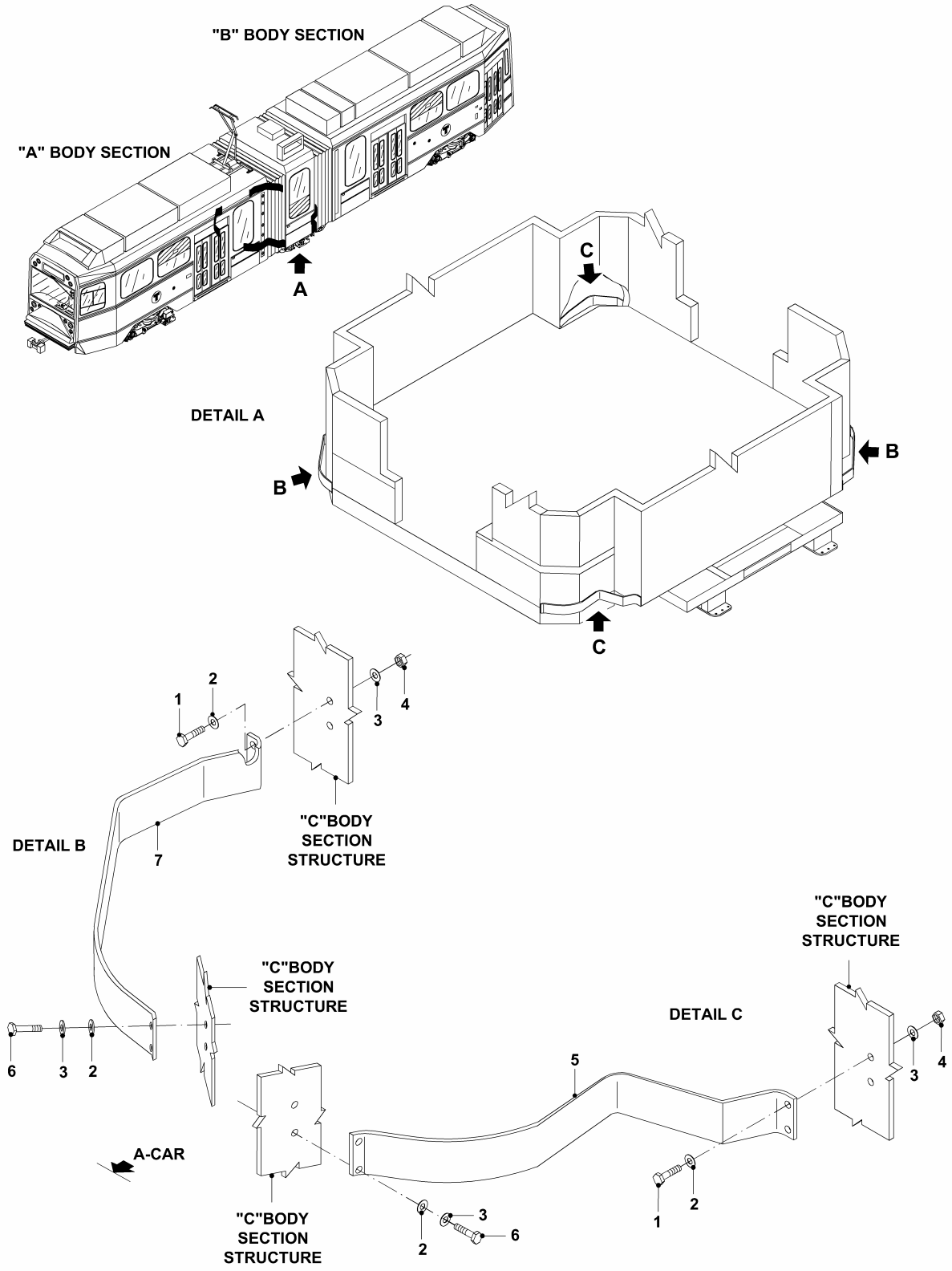

Figure 2-4 Bellow Protection Bracket Instl

Bellow Protection Bracket Instl (Fig. 2-4)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-004-	R12375510	R12375510	A0185	BELLOW PROTECTION BRACKET INSTL		EA	1
1	R123755135	1/4x3/4 STC 513-S	Z9009	.SCREW, FLAT REC CTSK HD - ATT.PT 1/4x3/4 STC 513 - TYPE S STC 513 -		EA	8
2	R123755132	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- ATT.PT TYPES STC 514 -		EA	16
3	R123755133	1/4 STC 515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515-TYPES STC 515		EA	16
4	R123755134	1/4 STC 542-S	Z9009	.NUT, HEX-1/4 STC 542-TYPE ATT.PT S STC 542 -		EA	16
5	R12375535	R12375535	A0185	.BRACKET ASSY, RH		EA	2
6	R123755131	1/4x3/4 STC 507-S	Z9009	.BOLT, HEX-1/4x3/4 STC 507- ATT.PT TYPE S STC 507 -		EA	8
7	R12375511	R12375511	A0185	.BRACKET ASSY, LH		EA	2

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-005-	R12314050	R12314050	A0185	FRONT END ASSY		EA	2
1	R12314401	R12314401	A0185	.SHELL, EXT UPPER SIDE		EA	1
2	R12314055	R12314055	A0185	.GASKET		FT	72.2
3	R12314402	R12314402	A0185	.SHELL, EXT LEFT SIDE		EA	1
4	R12314400	R12314400	A0185	.SHELL, EXT LOWER SIDE		EA	1
5	R12314403	R12314403	A0185	.SHELL, EXT RIGHT SIDE		EA	1
6	R12314053	R12314053	A0185	.SHIM - THK 0.04 - NEOPRENE 70 SHORE BLACK		EA	25
7	R12314052	R12314052	A0185	.GASKET - THK 0.04 - NEOPRENE 70 SHORE BLACK		EA	45
8	R12314051	R12314051	A0185	.BUSHING		EA	15
9	R123140501	1/4-20 UNCx7/8-S	Z9009	.SCREW, FLAT REC CTSK HD - ATT.PT 1/4-20 UNC x 7/8 - SSTL 18-8 -		EA	5
10	R123140503	1/4-20 UNCx1-1/2-S	Z9009	.SCREW, FLAT REC CTSK HD - ATT.PT 1/4-20 UNCx1-1/2 - SSTL 18.8 -		EA	4
11	R123140505	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- ATT.PT TYPE SSTC 514 -		EA	2
12	R123140506	1/4STC512-S	Z9009	.NUT, SELF-LOCKING-1/4 STC ATT.PT 512-TYPE SSTC 512 -		EA	2
13	R123140502	1/4-20 UNCx1 -S	Z9009	.SCREW, FLAT REC CTSK HD - ATT.PT 1/4-20 UNCx1 -SSTL 18.8 -		EA	6
14	R12314054	R12314054	A0185	.SHIM - THK 0.20 - NEOPRENE 70 SHORE BLACK		EA	2
15	R12314056	R12314056	A0185	.ADHESIVE TAPE - NEOPRENE		FT	3.3

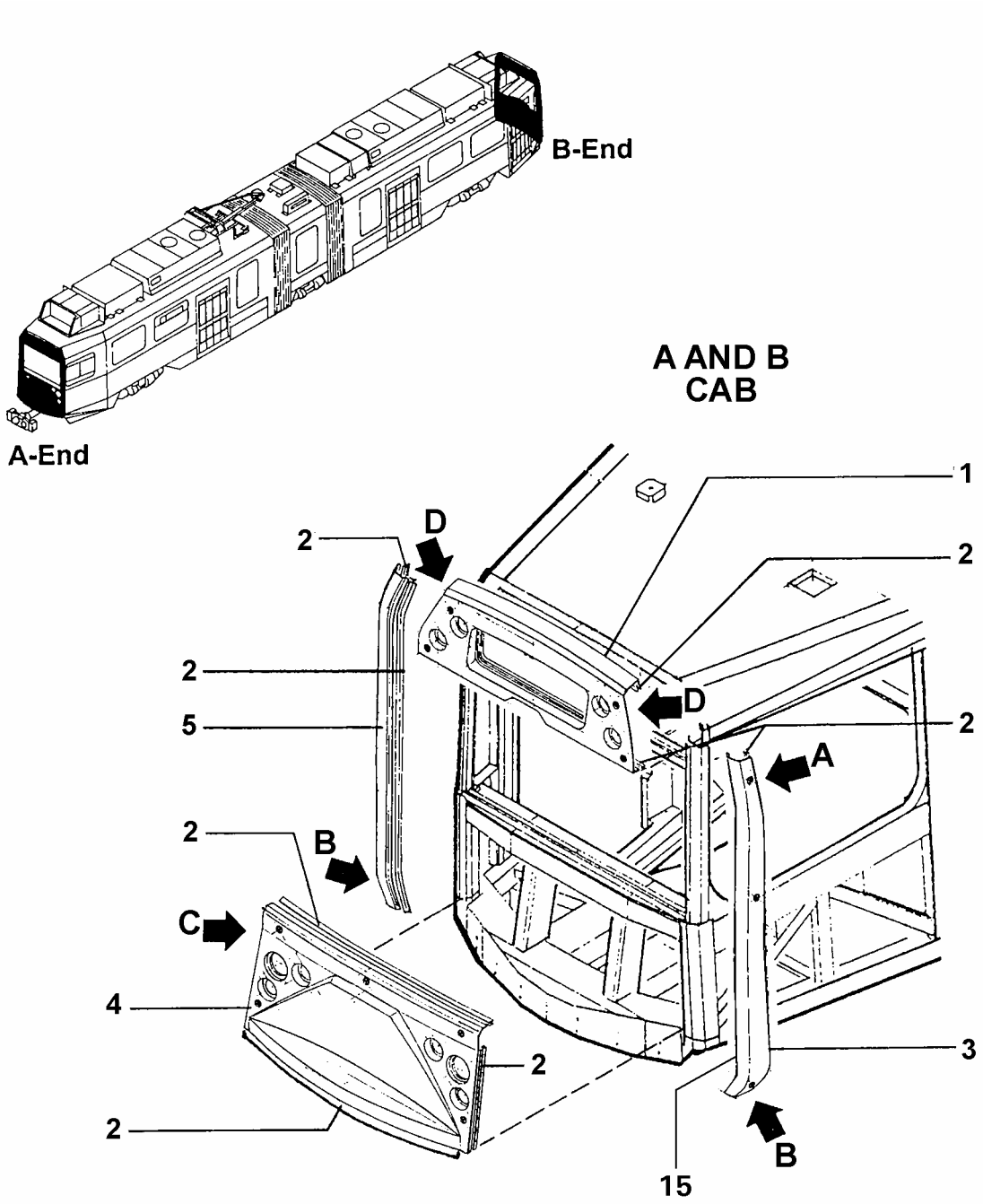

Figure 2-5 Front End Assy (Sheet 1 of 2)

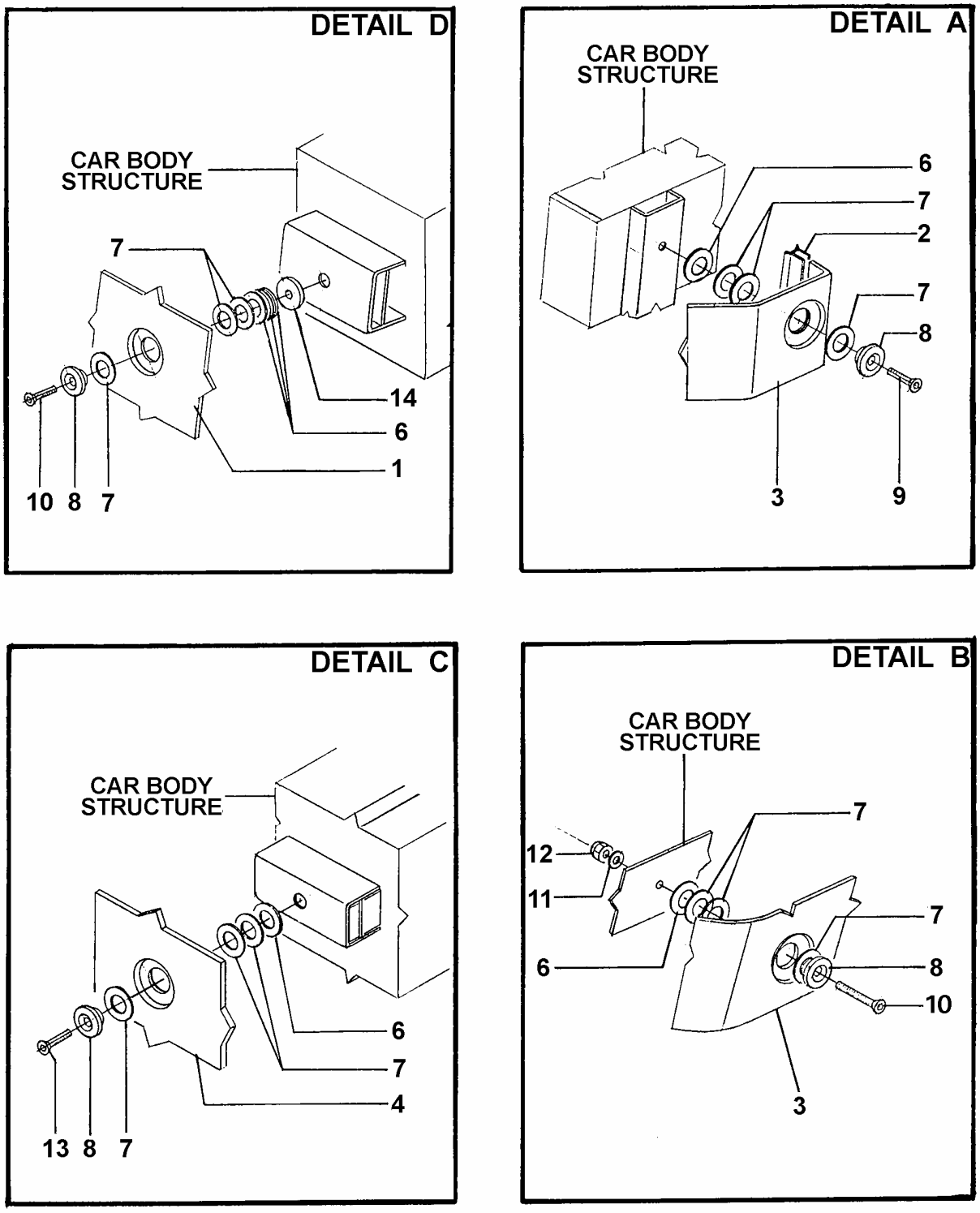

Figure 2-5 Front End Assy (Sheet 2 of 2)

Front End Assy (Fig. 2-5)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-005-	R12314050	R12314050	A0185	FRONT END ASSY		EA	2
1	R12314401	R12314401	A0185	.SHELL, EXT UPPER SIDE		EA	1
2	R12314055	R12314055	A0185	.GASKET		FT	72.2
3	R12314402	R12314402	A0185	.SHELL, EXT LEFT SIDE		EA	1
4	R12314400	R12314400	A0185	.SHELL, EXT LOWER SIDE		EA	1
5	R12314403	R12314403	A0185	.SHELL, EXT RIGHT SIDE		EA	1
6	R12314053	R12314053	A0185	.SHIM - THK 0.04 - NEOPRENE 70 SHORE BLACK		EA	25
7	R12314052	R12314052	A0185	.GASKET - THK 0.04 - NEOPRENE 70 SHORE BLACK		EA	45
8	R12314051	R12314051	A0185	.BUSHING		EA	15
9	R123140501	1/4-20 UNCx7/8-S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT 1/4-20 UNC x 7/8 - SSTL 18-8		EA	5
10	R123140503	1/4-20 UNCx1-1/2-S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT 1/4-20 UNCx1-1/2 - SSTL 18.8		EA	4
11	R123140505	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- - ATT.PT TYPE SSTC 514		EA	2
12	R123140506	1/4STC512-S	Z9009	.NUT, SELF-LOCKING-1/4 STC - ATT.PT 512-TYPE SSTC 512		EA	2
13	R123140502	1/4-20 UNCx1 -S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT 1/4-20 UNCx1 -SSTL 18.8		EA	6
14	R12314054	R12314054	A0185	.SHIM - THK 0.20 - NEOPRENE 70 SHORE BLACK		EA	2
15	R12314056	R12314056	A0185	.ADHESIVE TAPE - NEOPRENE		FT	3.3
16	R12314055	R12314054	A0185	SHIM - THK 0.20 – NEOPRENE ATT.PT 1/4-20 UNCx1 -SSTL 18.8		EA	2

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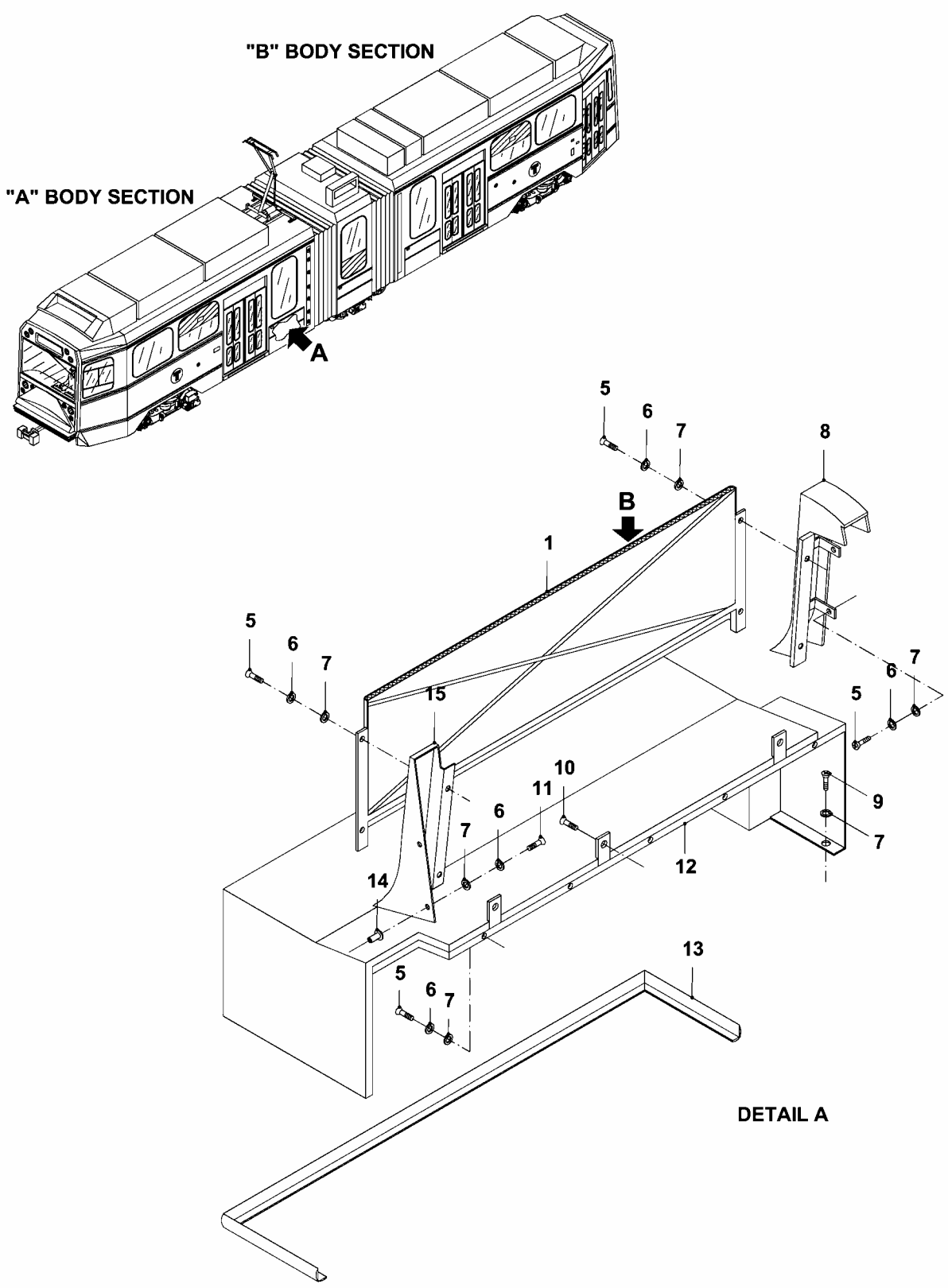

Figure 2-6 Battery Box (Sheet 1 of 2)

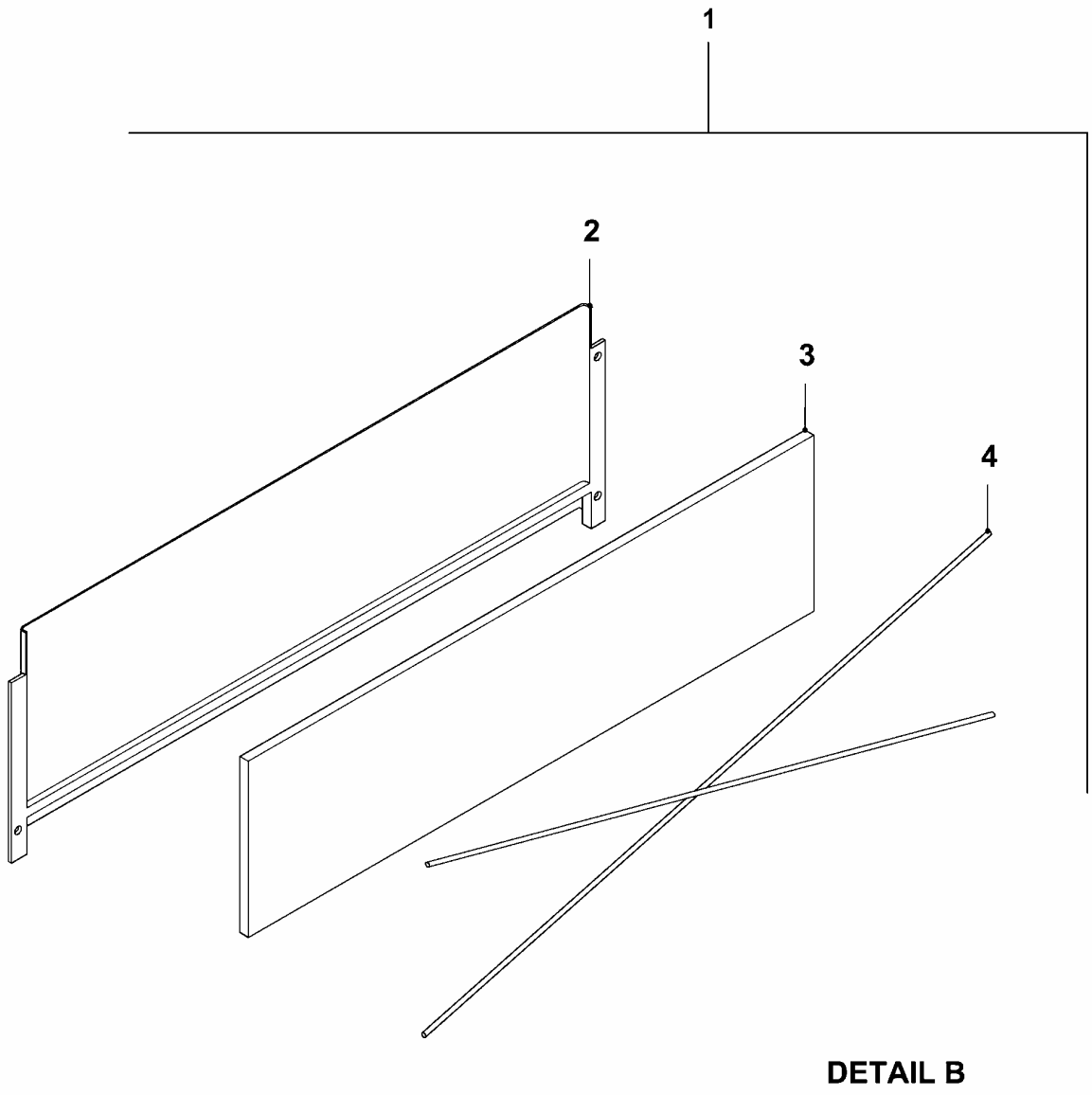

Figure 2-6 Battery Box (Sheet 2 of 2)

Battery Box (Fig. 2-6)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-006-	R12967000	R12967000	A0185	BATTERY BOX		EA	1
1	R12967002	R12967002	A0185	.PANEL BEHIND PASSENGER SEAT		EA	1
2	R12967011	R12967011	A0185	..PANEL		EA	1
3	R12967045	R12967045	A0185	..THERMAL INSULATION - 12x50, THK 0.5, DENSITY 0.75 lbs/cu.ft - ULTR		EA	1
4	R12967046	0.05DIA, LG=51.38	Z9009	..SPRING - 0.05 DIA, LG=51.38 - SSTL		EA	2
5	R129670491	NO 8-32 UNCx3/4 - T	Z9009	.SCREW, TAPPING, P.H. - NO 8 - ATT.PT x 3/4 UNC		EA	18
6	R129670498	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	20
7	R129670497	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	20
8	R12967018	R12967018	A0185	.PANEL, LEFT		EA	1
9	R129670494	NO 8x1 ANSI B18.6.1c1S	Z9009	.SCREW, WOOD, ROUND HD - ATT.PT TYPE IA REC - NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	6
10	R129670492	1/4-20 UNCx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD -1/4-20 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	3
11	R129670495	NO 8x1 ANSI B18.6.1c1S	Z9009	.SCREW, WOOD, ROUND HD - ATT.PT TYPE IA REC - NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	2
12	R12967008	R12967008	A0185	.BOX		EA	1
13	R12967003	R12967003	A0185	.GASKET		FT	5.58
14	R129670493	NO 8 -UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8 -UNC		EA	2
15	R12967017	R12967017	A0185	.PANEL, RIGHT		EA	1

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-007-	R12312602	R12312602	A0185	SIDE WALL EXTERIOR SHEET		EA	1
1	R12312896	R12312896	A0185	.INNER SHEET		EA	2
2	R12312771	R12312771	A0185	.INNER SHEET		EA	2
3	R12312779	R12312779	A0185	.INNER SHEET		EA	2
4	R12312760	R12312760	A0185	.INNER SHEET		EA	3
5	R12312754	R12312754	A0185	.INNER SHEET		EA	2
6	R12312750	R12312750	A0185	.INNER SHEET		EA	1
7	R12312767	R12312767	A0185	.INNER SHEET		EA	2
8	R12312742	R12312742	A0185	.INNER SHEET		EA	2
9	R12312738	R12312738	A0185	.INNER SHEET		EA	2

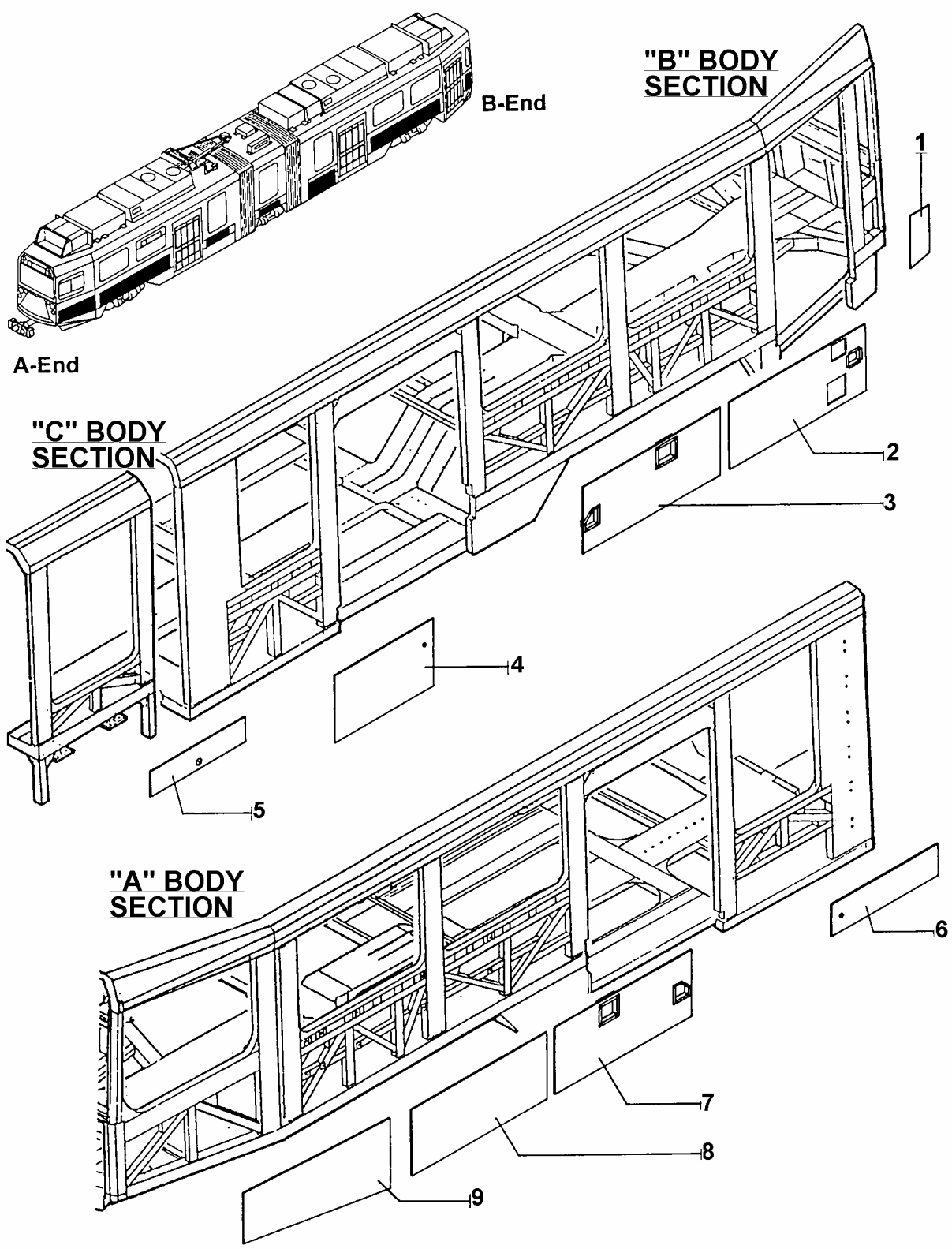

Figure 2-7 Side Wall Exterior Sheet (Sheet 1 of 2)

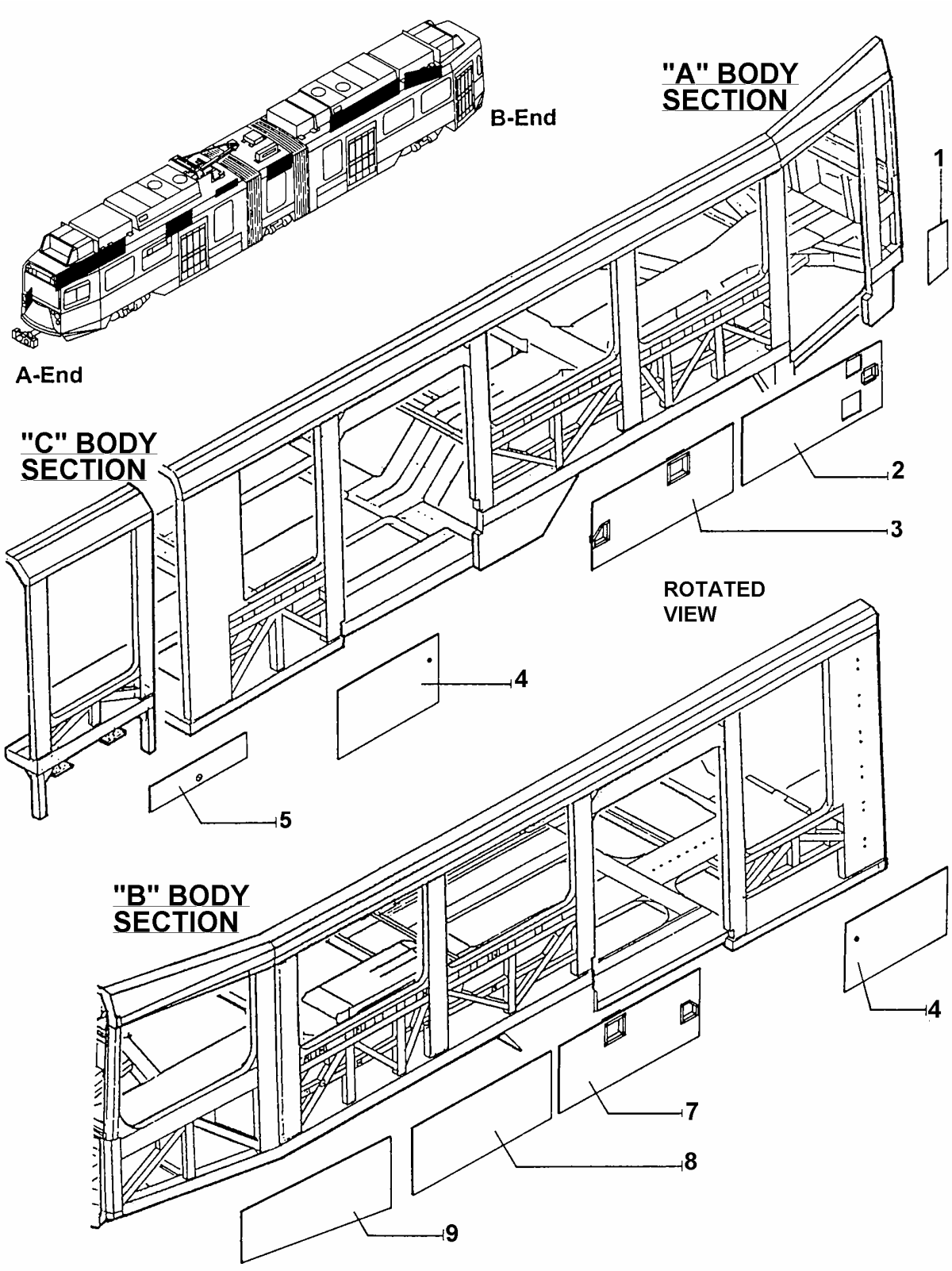

Figure 2-7 Side Wall Exterior Sheet (Sheet 2 of 2)

Side Wall Exterior Sheet (Fig. 2-7)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-007-	R12312602	R12312602	A0185	SIDE WALL EXTERIOR SHEET		EA	1
1	R12312896	R12312896	A0185	.INNER SHEET		EA	2
2	R12312771	R12312771	A0185	.INNER SHEET		EA	2
3	R12312779	R12312779	A0185	.INNER SHEET		EA	2
4	R12312760	R12312760	A0185	.INNER SHEET		EA	3
5	R12312754	R12312754	A0185	.INNER SHEET		EA	2
6	R12312750	R12312750	A0185	.INNER SHEET		EA	1
7	R12312767	R12312767	A0185	.INNER SHEET		EA	2
8	R12312742	R12312742	A0185	.INNER SHEET		EA	2
9	R12312738	R12312738	A0185	.INNER SHEET		EA	2

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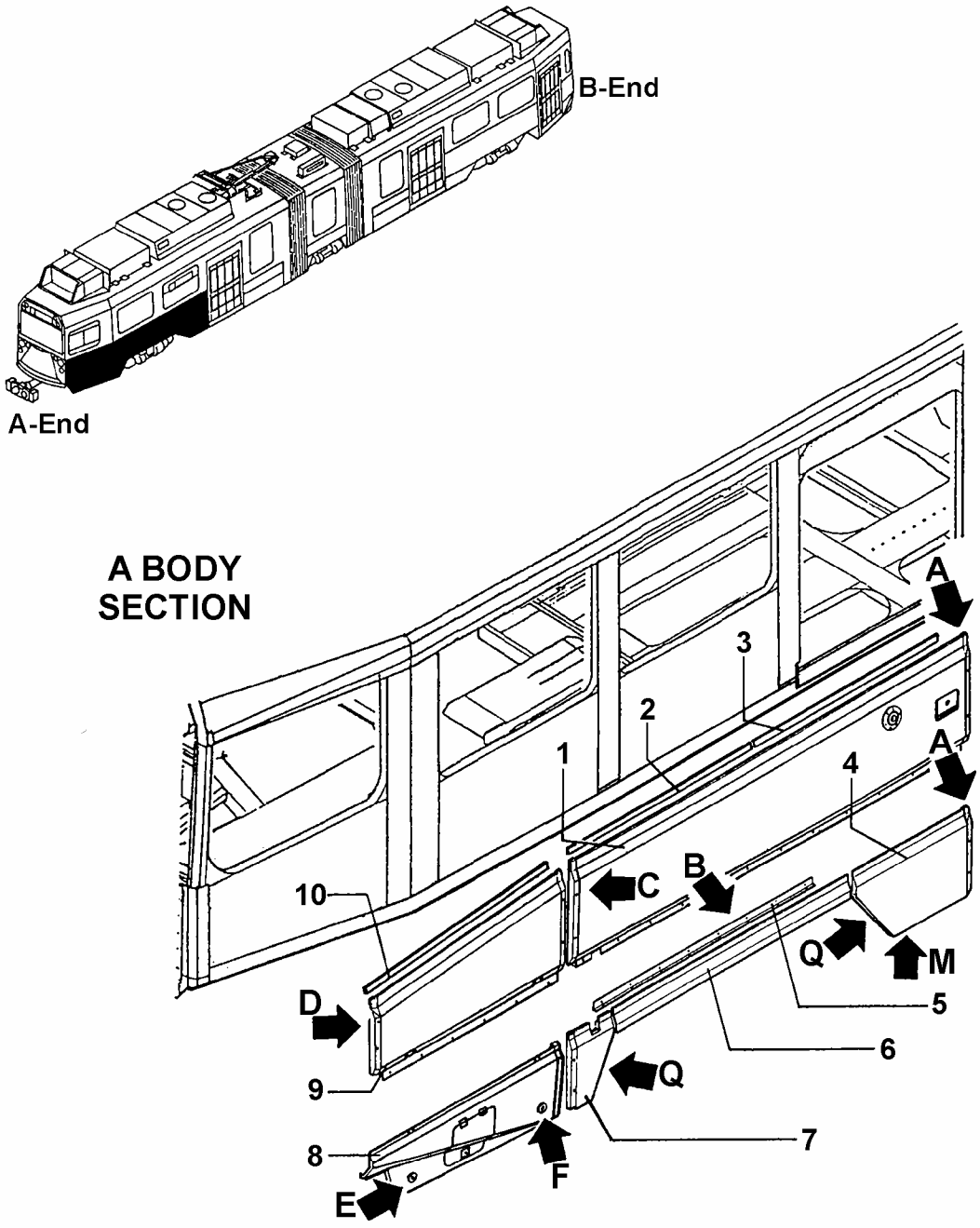

Figure 2-8 External Side Panel Installation (Sheet 1 of 9)

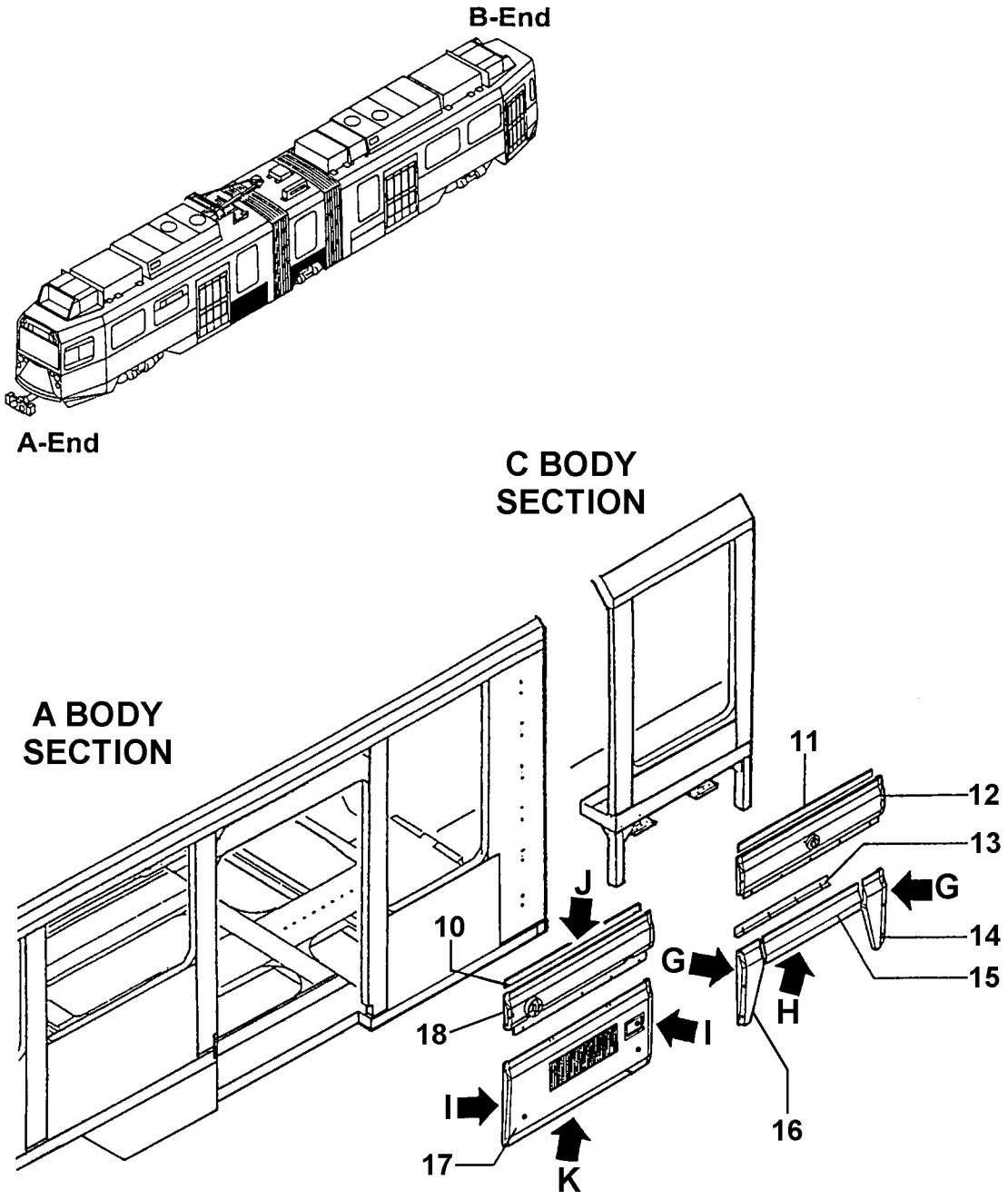

Figure 2-8 External Side Panel Installation (Sheet 2 of 9)

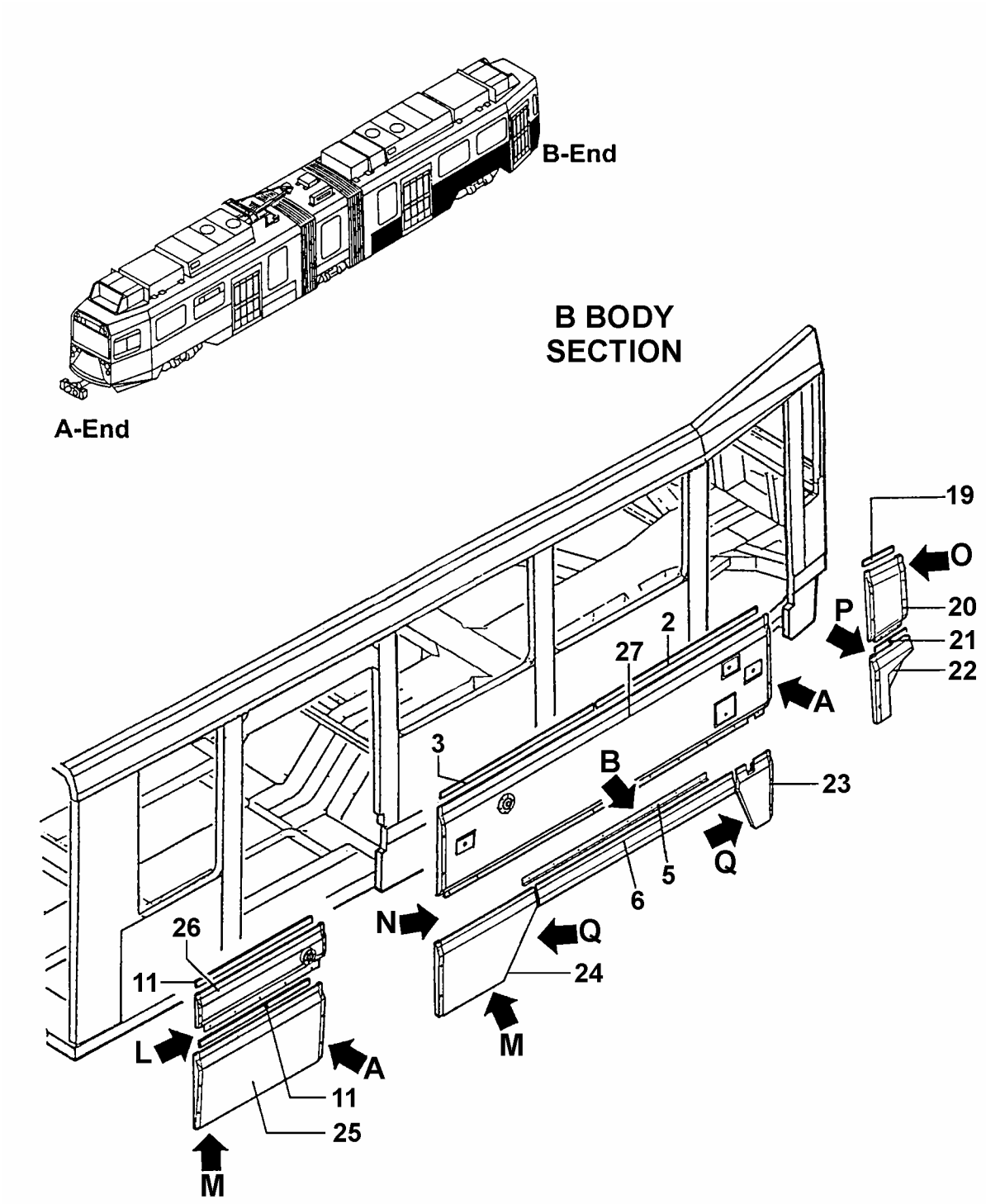

Figure 2-8 External Side Panel Installation (Sheet 3 of 9)

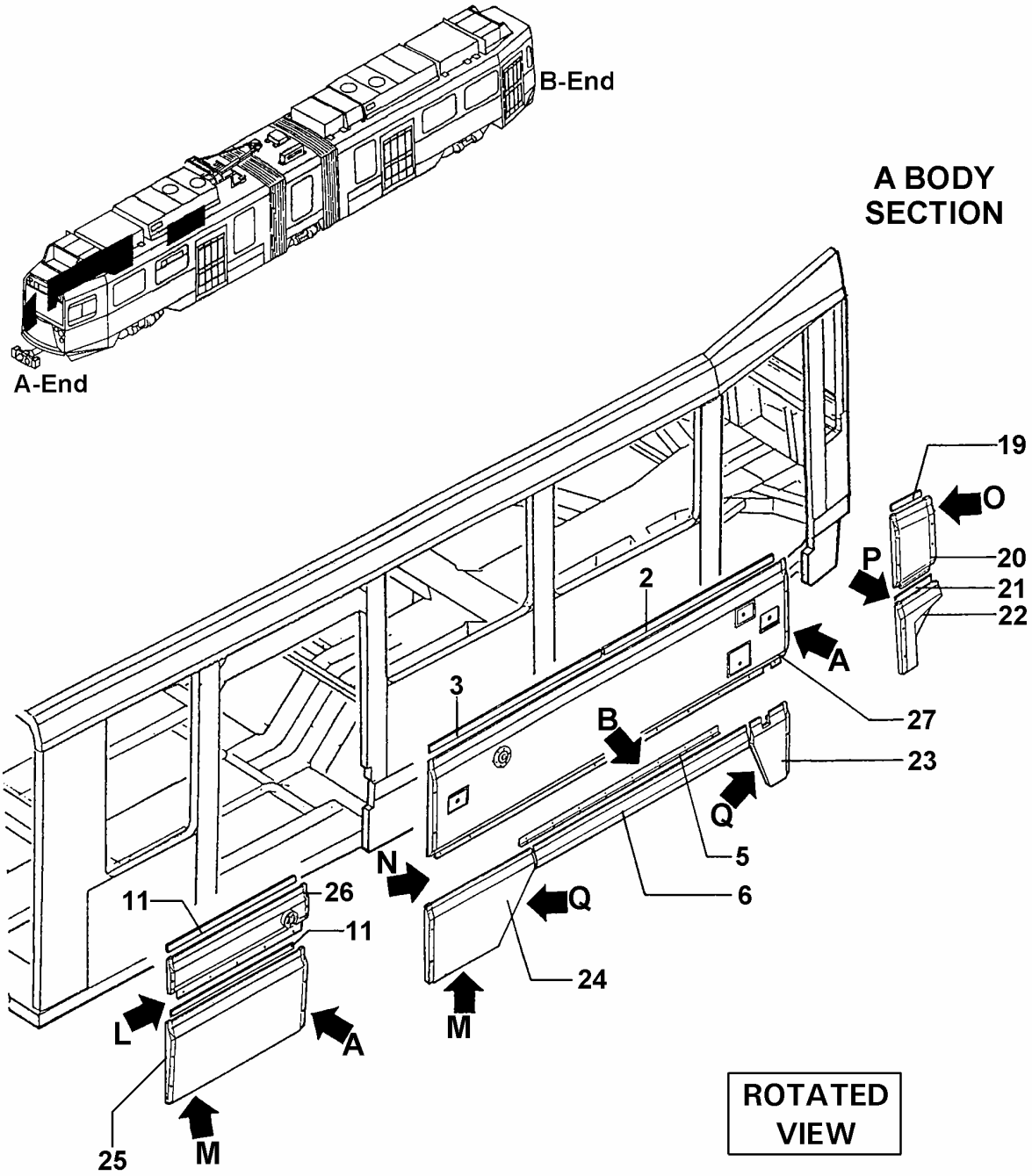

Figure 2-8 External Side Panel Installation (Sheet 4 of 9)

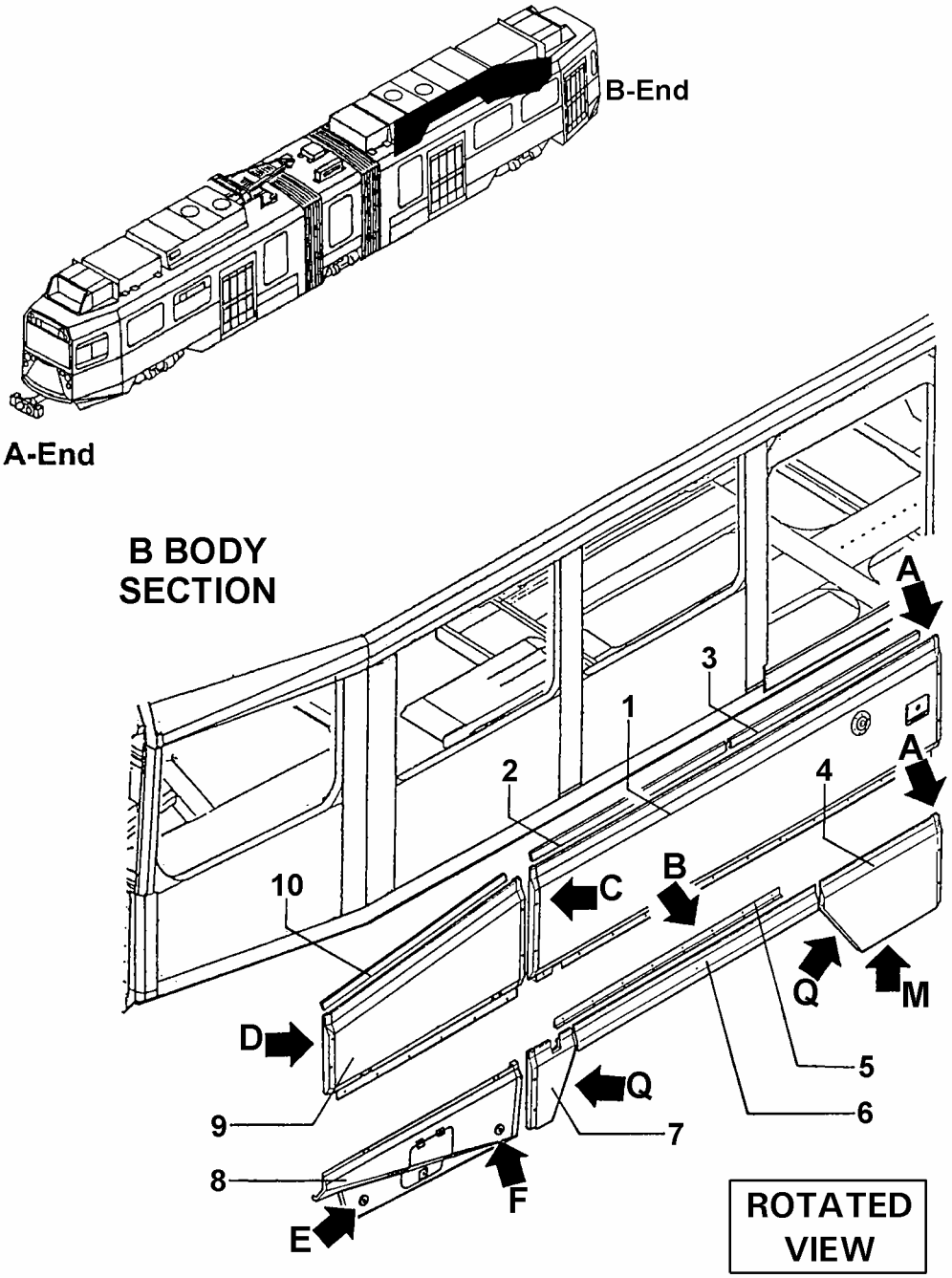

Figure 2-8 External Side Panel Installation (Sheet 5 of 9)

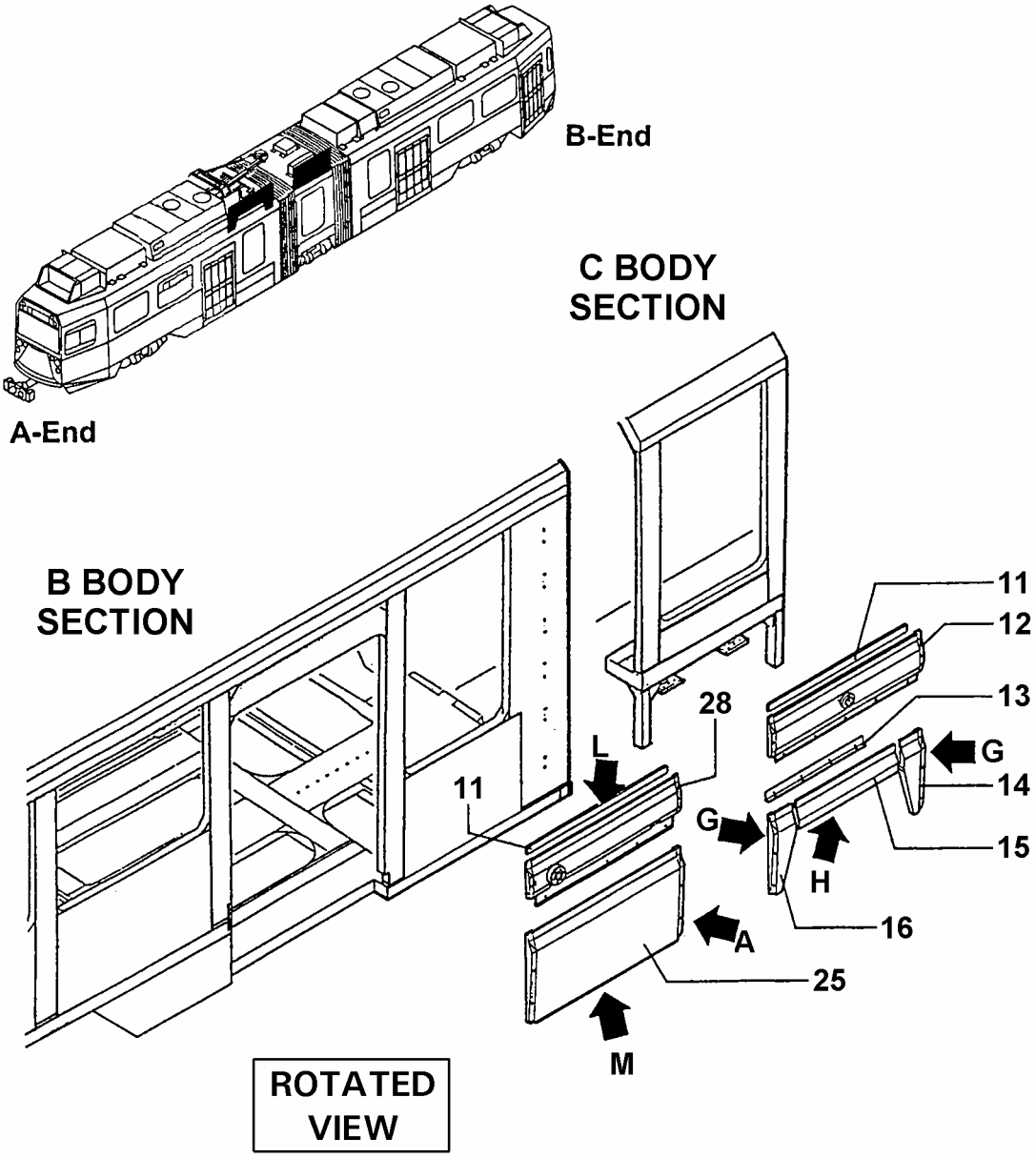

Figure 2-8 External Side Panel Installation (Sheet 6 of 9)

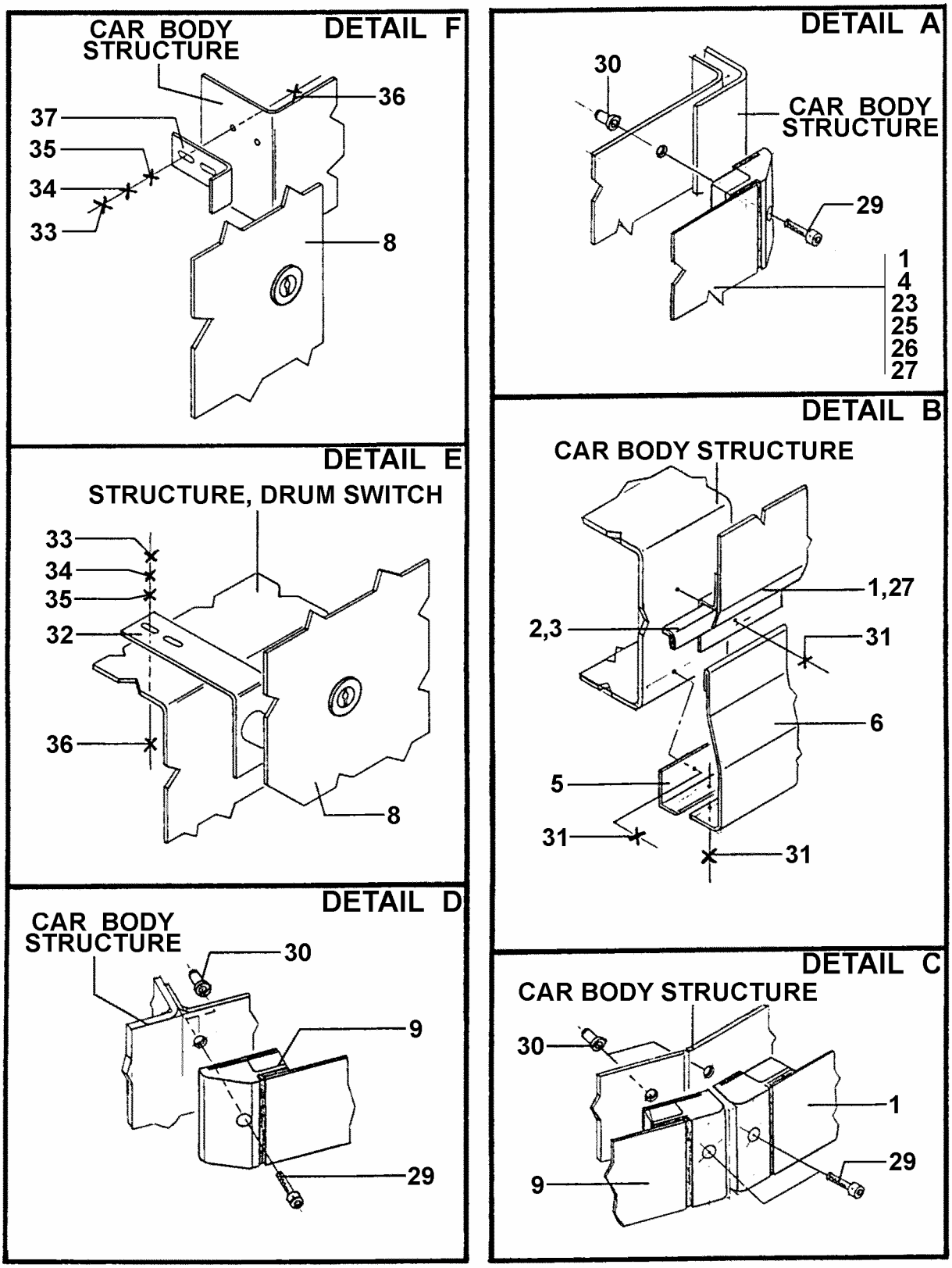

Figure 2-8 External Side Panel Installation (Sheet 7 of 9)

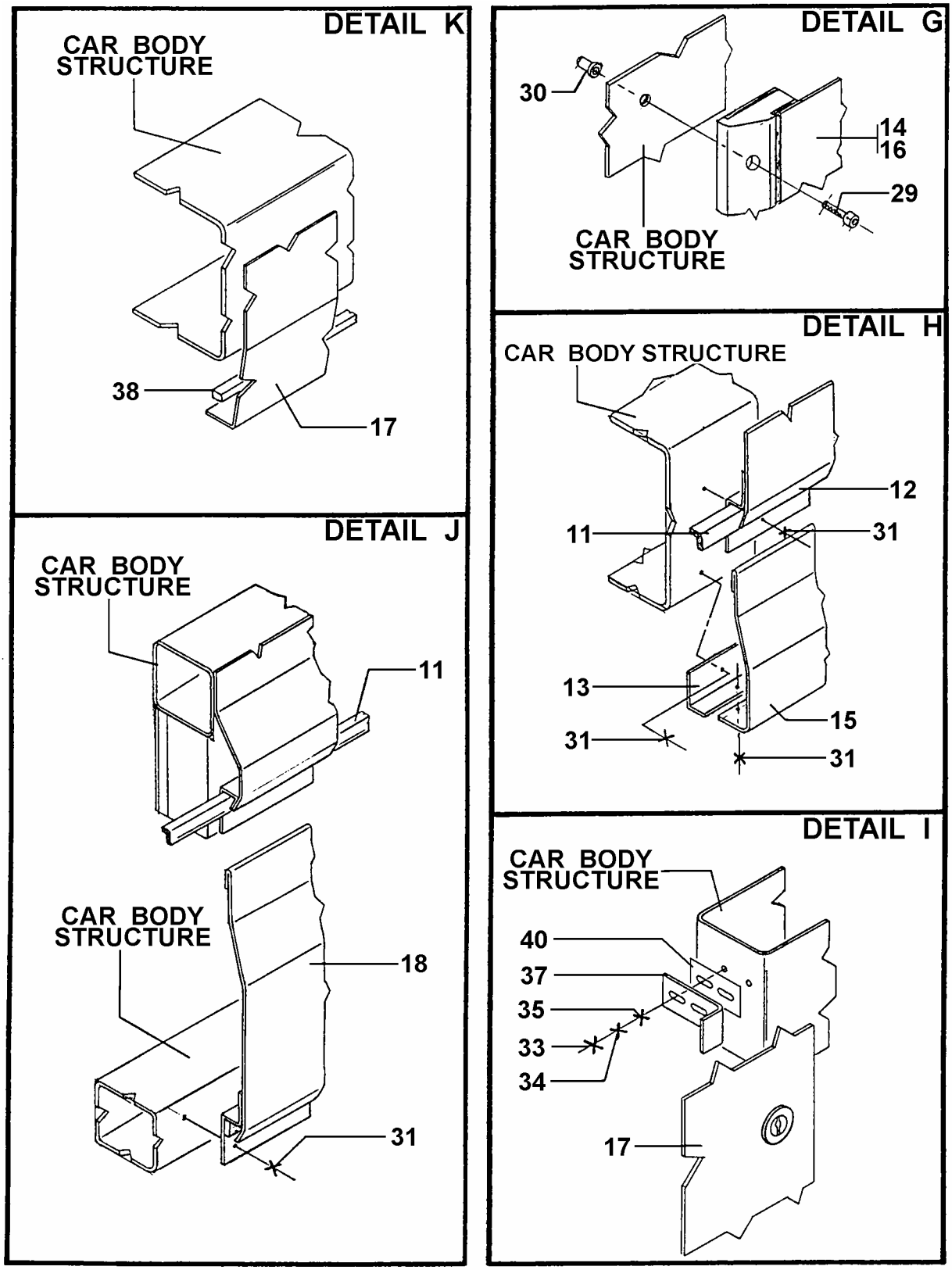

Figure 2-8 External Side Panel Installation (Sheet 8 of 9)

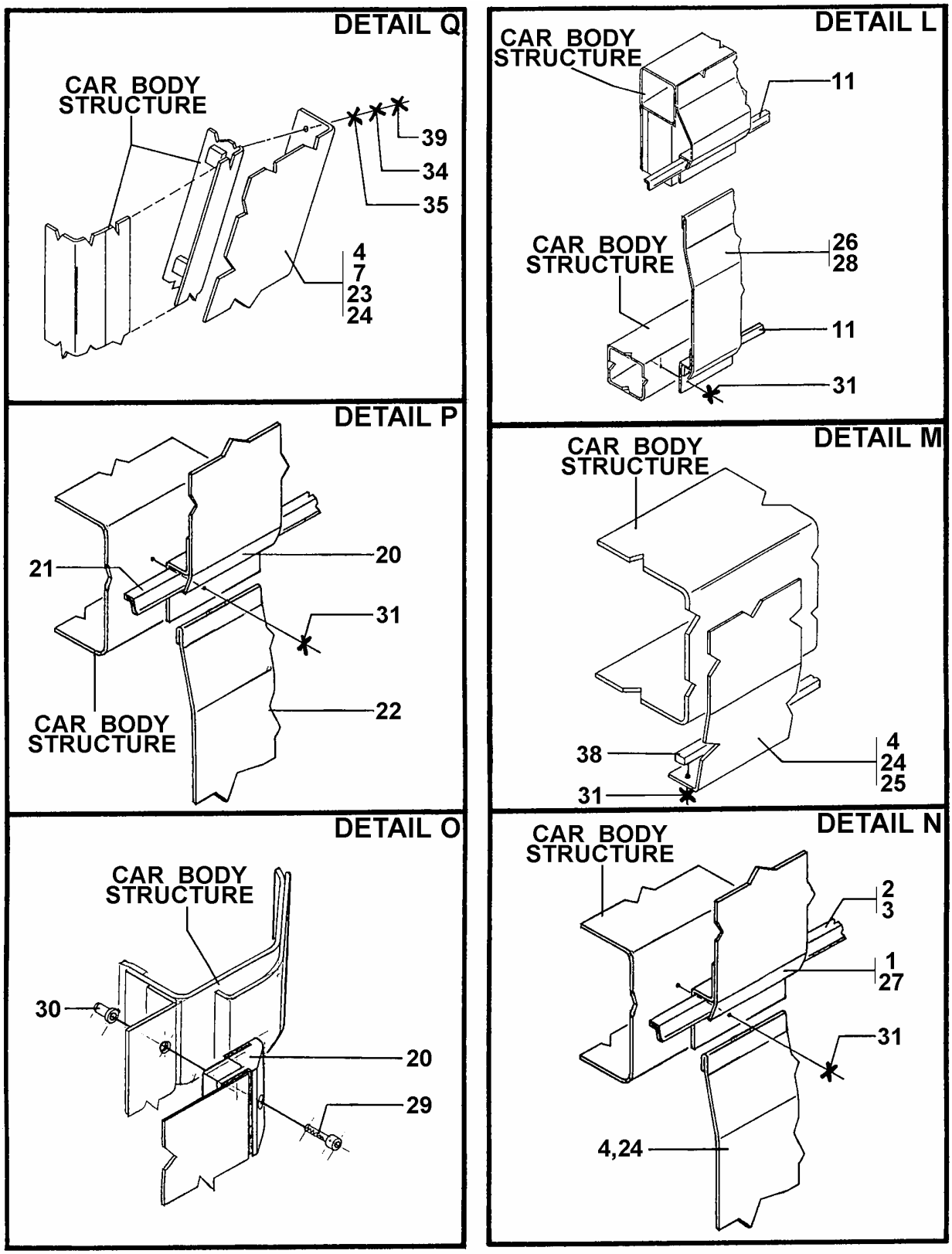

Figure 2-8 External Side Panel Installation (Sheet 9 of 9)

External Side Panel Installation (Fig. 2-8)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-008-	R12312601	R12312601	A0185	EXTERNAL SIDE PANEL INSTALLATION		EA	1
1	R12312701	R12312701	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-9 FOR DETAILS		EA	2
2	R12312932	R12312932	A0185	.GASKET		EA	4
3	R12312934	R12312934	A0185	.GASKET		EA	4
4	R12312704	R12312704	A0185	.PANEL, LOWER		EA	2
5	R12312952	R12312952	A0185	.ANGLE		EA	4
6	R12312703	R12312703	A0185	.PANEL, LOWER		EA	4
7	R12312706	R12312706	A0185	.PANEL, LOWER		EA	2
8	R12312711	R12312711	A0185	.PANEL ASSY, LOWER - SEE FIG. 2-11 FOR DETAILS		EA	2
9	R12312710	R12312710	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-10 FOR DETAILS		EA	2
10	R12312931	R12312931	A0185	.GASKET		EA	2
11	R12312933	R12312933	A0185	.GASKET		EA	11
12	R12312714	R12312714	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-12 FOR DETAILS		EA	2
13	R12312953	R12312953	A0185	.ANGLE		EA	2
14	R12312715	R12312715	A0185	.PANEL, LOWER		EA	2
15	R12312727	R12312727	A0185	.PANEL, LOWER		EA	2
16	R12312721	R12312721	A0185	.PANEL, LOWER		EA	2
17	R12312713	R12312713	A0185	.PANEL ASSY, BATTERY HATCH - SEE FIG. 2-14 FOR DETAILS		EA	1
18	R12312712	R12312712	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-13 FOR DETAILS		EA	1
19	R12312935	R12312935	A0185	.GASKET		EA	2
20	R12312709	R12312709	A0185	.PANEL, UPPER		EA	2
21	R12312936	R12312936	A0185	.GASKET		EA	2
22	R12312708	R12312708	A0185	.PANEL, LOWER		EA	2
23	R12312707	R12312707	A0185	.PANEL, LOWER		EA	2
24	R12312705	R12312705	A0185	.PANEL, LOWER		EA	2
25	R12312717	R12312717	A0185	.PANEL, LOWER		EA	3
26	R12312716	R12312716	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-16 FOR DETAILS		EA	2
27	R12312702	R12312702	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-17 FOR DETAILS		EA	2
28	R12312718	R12312718	A0185	.PANEL ASSY, UPPER - SEE FIG. 2-20 FOR DETAILS		EA	1
29	R123126013	5/16-18 UNCx1 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - 5/16-18 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	76
30	R123126012	5/16-18 UNC-RS	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT 5/16-18 UNC - SSTL AISI 304		EA	76
31	R123126011	27 11-0617	F1525	.RIVET		EA	206
32	R12312627	R12312627	A0185	.STRIKER		EA	2
33	R123126014	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	12
34	R123126018	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	24
35	R123126017	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	24
36	R123126013	NO 8 ANSI B24.2 - S	Z9008	.WASHER, HEL SPRING - NO 8 - ATT.PT		EA	25

External Side Panel Installation (Fig. 2-8)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-008- 36	R1231260112	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
37	R12312927	R12312927	A0185	.STRIKER		EA	4
38	R123126016	R123126019	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x275.59 - NEOPRENE, 70 SHORE		EA	1
39	R1231260110	NO 8-32 UNCx1 ANSI B18.6.3cS	Z9008	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	24
40	R12312798	R12312797	A0185	.SHIM			AR

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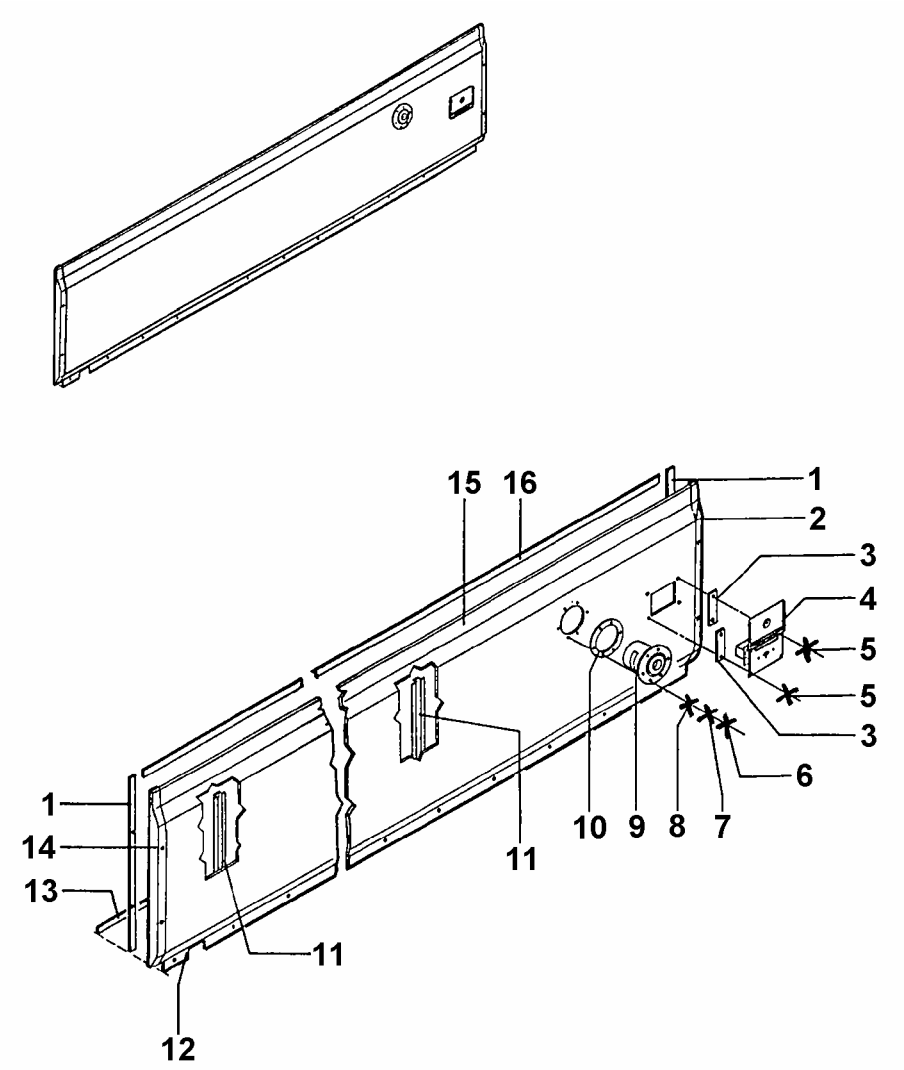

Figure 2-9 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-9)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-009-	R12312701	R12312701	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312978	R12312978	A0185	.GASKET, SELF-STICKING ON ONE SIDE -0.79x0.20x30.31 - NEOPRENE, 70 SHORE		EA	2
2	R12312723	R12312723	A0185	.BAR, END		EA	1
3	R12312814	R12312814	A0185	.PLATE		EA	2
4	R12354221	59641345	E0017	.CREW KEY SWITCH ASSY, CTR DOOR, OUTSIDE - SEE FIG. 4-40 FOR DETAIL		EA	1
5	R123127012	NO 10-24 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 10-24 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	8
6	R123127016	NO 10-24 UNCx5/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 10-24 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	6
7	R123127018	NO10ANSIB27.1-S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
8	R123127017	NO10ANSIB27.2-S	Z9009	.WASHER, PLAIN - NO 10 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	6
9	R12466108	N840-5410-001	B0023	.SPEAKER, EXTERIOR (A15) - SEE FIG. 12-1 FOR NHA		EA	1
10	R12312813	R12312813	A0185	.PLATE		EA	1
11	R12312725	R12312725	A0185	.REINFORCEMENT		EA	6
12	R12312726	R12312726	A0185	.PANEL		EA	1
13	R12312979	R12312979	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x144.72 - NEOPRENE, 70 SHORE		EA	1
14	R12312724	R12312724	A0185	.BAR, END		EA	1
15	R12312722	R12312722	A0185	.SHEET		EA	1
16	R12312937	R12312937	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x144.49 - NEOPRENE, 70 SHORE		EA	1
17	R12312726	R12312813	A0185	REINFORCEMENT		EA	1
18	R12311248	R12312813	A0184	.REINFORCEMENT		EA	1

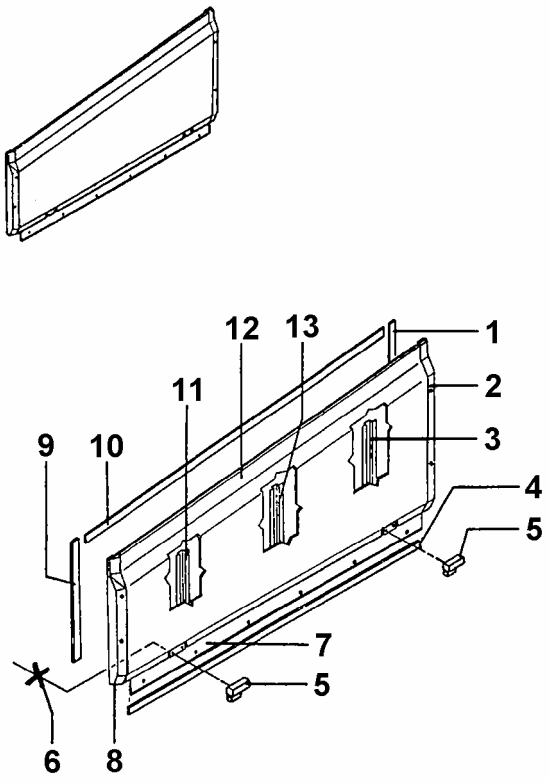

Figure 2-10 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-10)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-010-	R12312710	R12312710	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312961	R12312961	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x29.53 - NEOPRENE, 70 SHORE		EA	1
2	R12312763	R12312763	A0185	.BAR, END		EA	1
3	R12312958	R12312958	A0185	.REINFORCEMENT		EA	1
4	R12312959	R12312959	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x64.21 - NEOPRENE, 70 SHORE		EA	1
5	R123127104	96-10-510-50-A	B0005	.HINGE, TYPE A		EA	2
6	R123127101	NO 10-32 UNFx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 10-32 UNFx3/4 ANSI B18.6.3 - SSTL AISI 304		EA	4
7	R12312766	R12312766	A0185	.PANEL		EA	1
8	R12312757	R12312757	A0185	.BAR, END		EA	1
9	R12312965	R12312965	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x21.65 - NEOPRENE, 70 SHORE		EA	1
10	R12312964	R12312964	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x70.87 - NEOPRENE, 70 SHORE		EA	1
11	R12312956	R12312956	A0185	.REINFORCEMENT		EA	1
12	R12312762	R12312762	A0185	.SHEET		EA	1
13	R12312957	R12312957	A0185	.REINFORCEMENT		EA	1

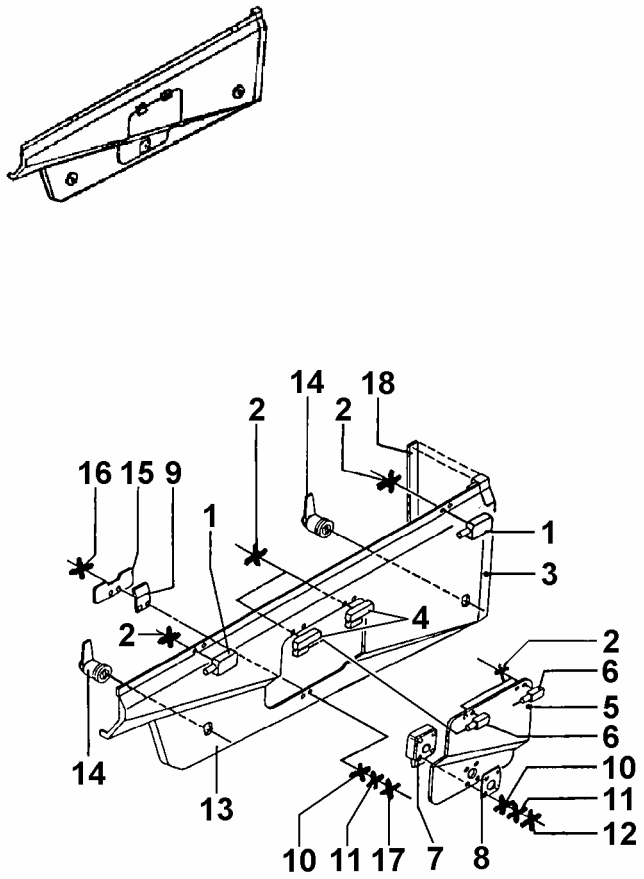

Figure 2-11 Panel Assy, Lower

Panel Assy, Lower (Fig. 2-11)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-011-	R12312711	R12312711	A0185	PANEL ASSY, LOWER - SEE FIG. 2-8 FOR NHA		EA	1
1	R123127104	96-10-510-50-A	B0005	.HINGE, TYPE A - SEE FIG. 2-10 FOR QTY		EA	1
2	R123127115	NO 10-32 UNFx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 10-32 UNFx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	12
3	R12312770	R12312770	A0185	.BAR, END		EA	1
4	R1231271114	96-10-520-50-B	B0005	.HINGE, TYPE B		EA	1
5	R12312635	R12312635	A0185	.DOOR		EA	1
6	R123127117	96-10-510-50-A	B0005	.HINGE, TYPE A		EA	1
7	R123127118	X-1255	34475	.LATCH, SPRING LOADED - WITH ITEMS 8 AND 9		EA	1
8	R123127118A	X-1255A	34475	.COVER, LATCH		EA	1
9	R123127118B	X-1255B	34475	.STRIKER, LATCH		EA	1
10	R1231271111	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI B27.2 - SSTL AISI 304		EA	6
11	R1231271112	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
12	R1231271110	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	4
13	R12312769	R12312769	A0185	.PANEL		EA	1
14	R12312682	R12312682	A0185	.LOCK, TYPE B		EA	2
15	R12312636	R12312636	A0185	.STRIKER		EA	1
16	R1231271113	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	2
17	R123127119	NO 8-32 UNCx3/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx3/8 ANSI B18.6.3 - SSTL AISI 304A		EA	2
18	R12312966	R12312966	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x29.53 - NEOPRENE, 70 SHORE		EA	1

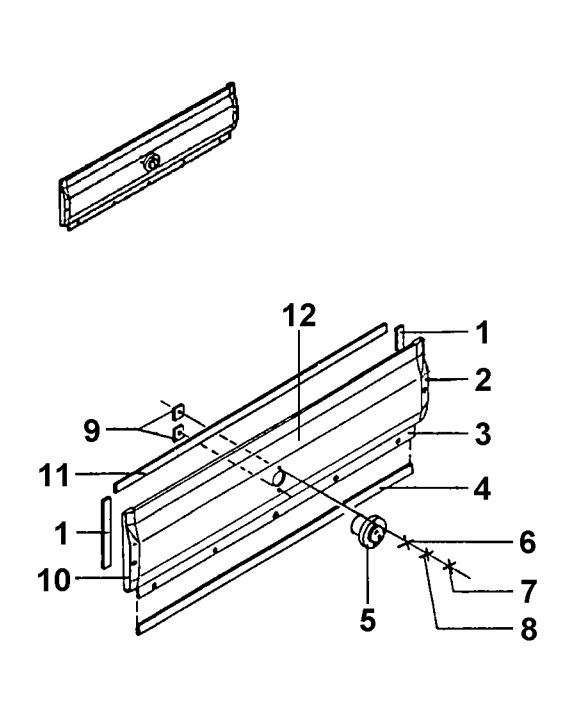

Figure 2-12 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-12)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-012-	R12312714	R12312714	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312619	R12312619	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x8.43 - NEOPRENE, 70 SHORE		EA	2
2	R12312774	R12312774	A0185	.BAR, END		EA	1
3	R12312870	R12312870	A0185	.SHEET		EA	1
4	R12312620	R12312620	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x51.97 - NEOPRENE, 70 SHORE		EA	1
5	R12495863	103238017	B0006	TURN SIGNAL LIGHT, AMBER - SEE FIG. 6-1 FOR NHA - 6-8 FOR DETAILS		EA	1
6	R123127145	NO10ANSIB27.2-S	Z9009	.WASHER, PLAIN - NO 10 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	2
7	R123127143	NO 10-24 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 10-24 UNCx5/8 ANSI B18.6.3- SSTL AISI 304		EA	2
8	R123127146	NO 10 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING-NO 10 -ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
9	R12312871	R12312871	A0185	.PLATE		EA	2
10	R12312775	R12312775	A0185	.BAR, END		EA	1
11	R12312621	R12312621	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.77 - NEOPRENE, 70 SHORE		EA	1
12	R12312794	R12312794	A0185	.PANEL		EA	1

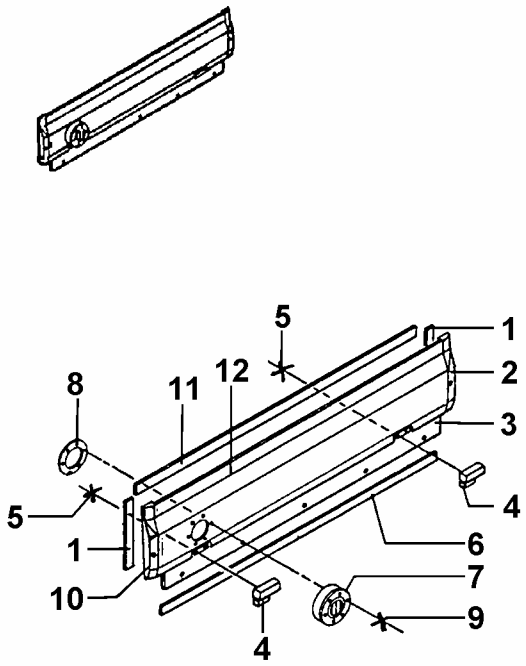

Figure 2-13 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-13)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-013-	R12312712	R12312712	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312990	R12312990	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x8.43 - NEOPRENE, 70 SHORE		EA	2
2	R12312774	R12312774	A0185	.BAR, END		EA	1
3	R12312776	R12312776	A0185	.SHEET		EA	1
4	R123127124	96-10-510-50-A	B0005	.HINGE, TYPE A		EA	2
5	R123127125	NO 10-32 UNFx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 10-32 UNFx3/4 ANSI B18.6.3 - SSTL AISI 304		EA	6
6	R12312991	R12312991	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.97 - NEOPRENE, 70 SHORE		EA	1
7	R12354222	59631343	E0017	.PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
8	R12312867	R12312867	A0185	.PLATE, FASTENING		EA	1
9	R123127123	NO 10-24 UNCx1-1/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1-1/4 ANSI B18.6.3 - SSTL AISI 3		EA	6
10	R12312775	R12312775	A0185	.BAR, END		EA	1
11	R12312989	R12312989	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.77 - NEOPRENE, 70 SHORE		EA	1
12	R12312773	R12312773	A0185	.PANEL		EA	1

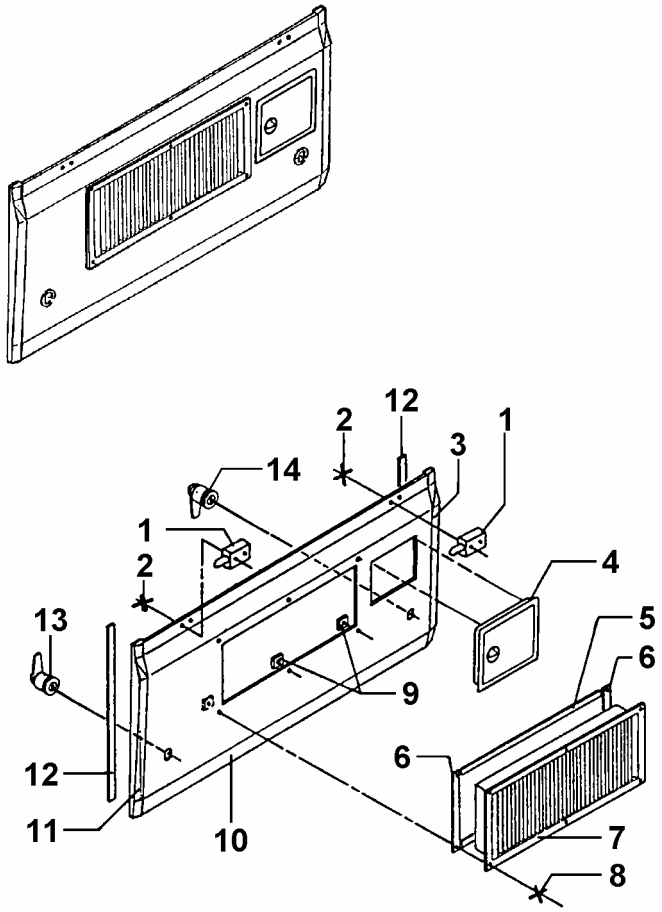

Figure 2-14 Panel Assy, Battery Hatch

Panel Assy, Battery Hatch (Fig. 2-14)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-014-	R12312713	R12312713	A0185	PANEL ASSY, BATTERY HATCH - SEE FIG. 2-8 FOR NHA		EA	1
1	R123127124	96-10-510-50-A	B0005	.HINGE, TYPE A - SEE FIG. 2-13 FOR QTY		EA	1
2	R123127133	NO 10-32 UNFx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 10-32 UNFx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	4
3	R12312782	R12312782	A0185	.BAR, END		EA	1
4	R12312812	R12312812	A0185	.DOOR, BATTERY BUTTON - SEE FIG. 2-15 FOR DETAILS		EA	1
5	R12312928	R12312928	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x28.38 - NEOPRENE, 70 SHORE		EA	2
6	R12312929	R12312929	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x11.22 - NEOPRENE, 70 SHORE		EA	2
7	R12312785	R12312785	A0185	.SHUTTER		EA	1
8	R123127134	NO 10-24 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	6
9	R12312871	R12312871	A0185	.PLATE		EA	6
10	R12312781	R12312781	A0185	.SHEET		EA	1
11	R12312783	R12312783	A0185	.BAR, END		EA	1
12	R12312625	R12312625	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x23.94 - NEOPRENE, 70 SHORE		EA	2
13	R12312684	R12312684	A0185	.LOCK, TYPE D		EA	1
14	R12312681	R12312681	A0185	.LOCK, TYPE A		EA	1

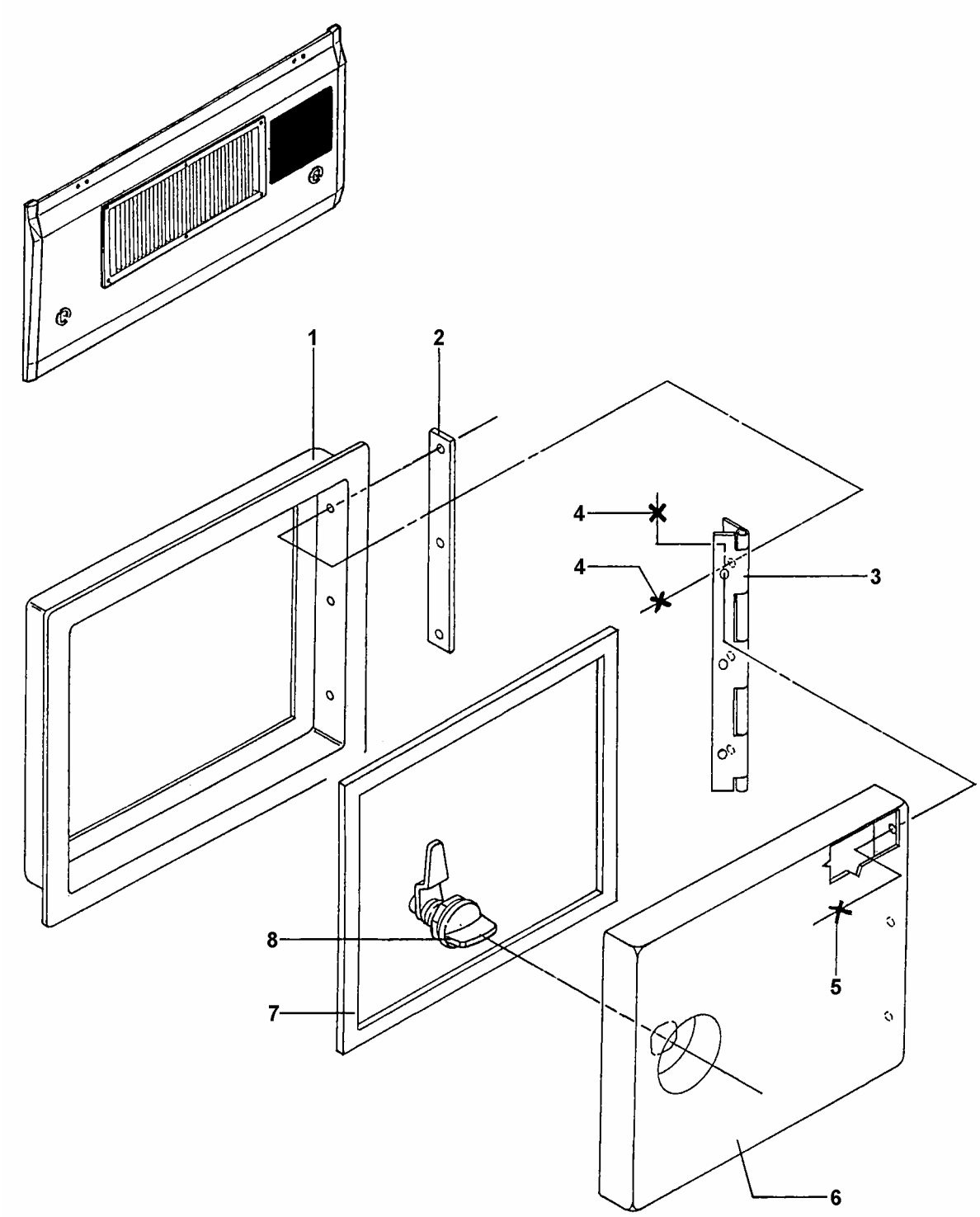

Figure 2-15 Door, Battery Button

Door, Battery Button (Fig. 2-15)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-015-	R12312812	R12312812	A0185	DOOR, BATTERY BUTTON - SEE FIG. 2-14 FOR NHA		EA	1
1	R12312915	R12312915	A0185	.FRAME		EA	1
2	R12312926	R12312926	A0185	.PLATE		EA	1
3	R12312917	R12312917	A0185	.HINGE		EA	1
4	R123128121	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	6
5	R123128122	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	3
6	R12312916	R12312916	A0185	.COVER		EA	1
7	R12312920	R12312920	A0185	.GASKET		EA	1
8	R123128124	E5-1-125-040	B0005	.LOCK		EA	1

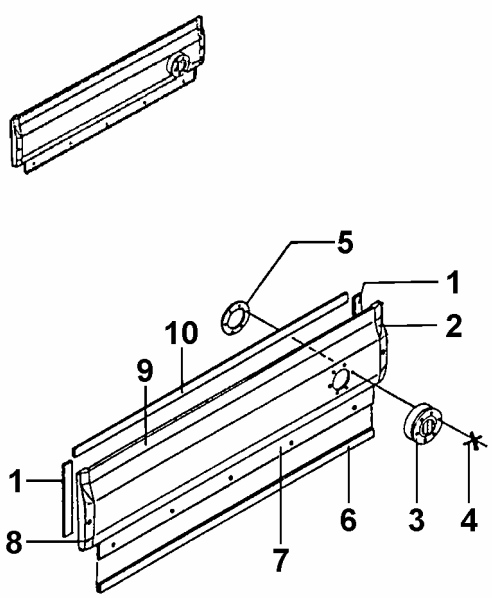

Figure 2-16 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-16)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-016-	R12312716	R12312716	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312866	R12312866	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x8.43 - NEOPRENE, 70 SHORE		EA	2
2	R12312775	R12312775	A0185	.BAR, END		EA	1
3	R12354222	59631343	E0017	.PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
4	R123127163	NO 10-24 UNCx1-1/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1-1/4 ANSIB18.6.3-SSTLAISI3		EA	6
5	R12312867	R12312867	A0185	.PLATE, FASTENING		EA	1
6	R12312890	R12312890	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x51.97 - NEOPRENE, 70 SHORE		EA	1
7	R12312869	R12312869	A0185	.SHEET		EA	1
8	R12312774	R12312774	A0185	.BAR, END		EA	1
9	R12312799	R12312799	A0185	.PANEL		EA	1
10	R12312815	R12312815	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.77 - NEOPRENE, 70 SHORE		EA	1

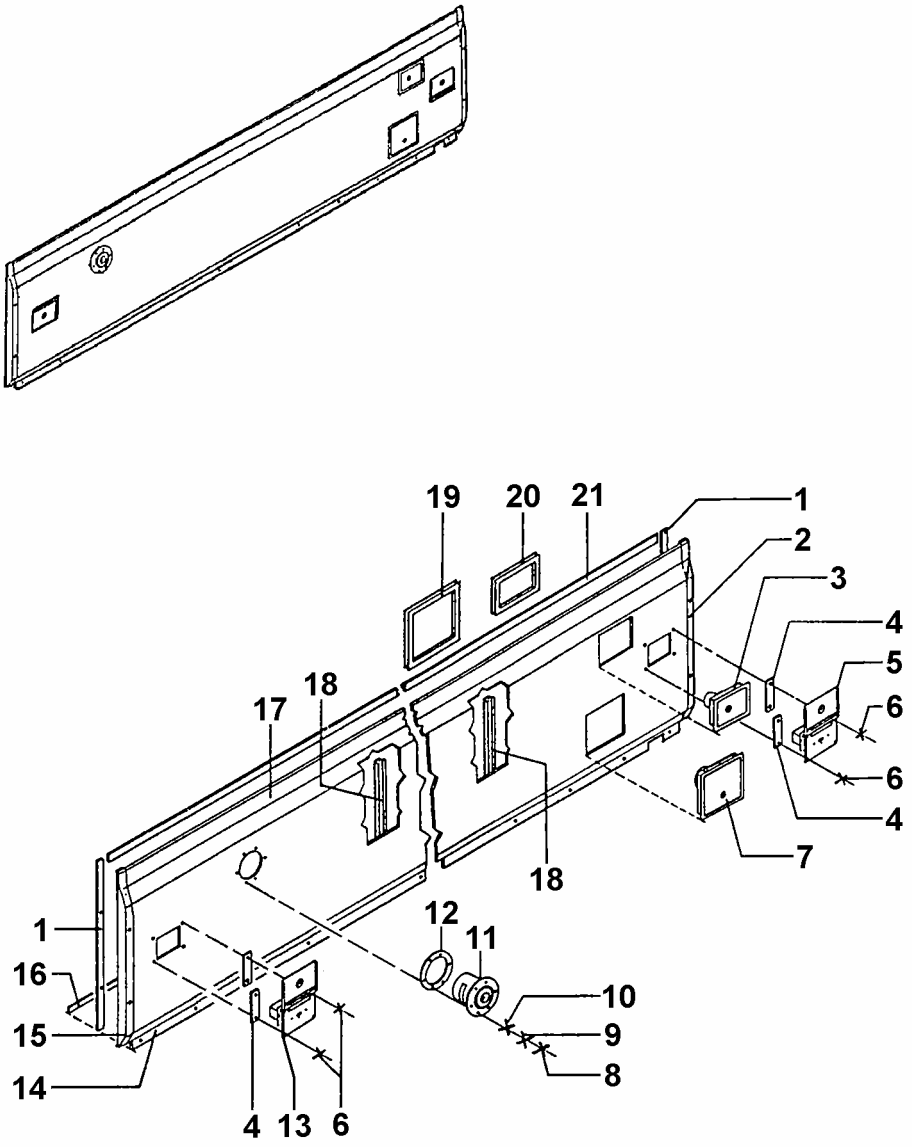

Figure 2-17 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-17)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-017-	R12312702	R12312702	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312912	R12312912	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x29.53 - NEOPRENE, 70 SHORE		EA	2
2	R12312723	R12312723	A0185	.BAR, END		EA	1
3	R12312875	R12312875	A0185	.DOOR, SAND BOX FILL-UP - SEE FIG. 2-18 FOR DETAILS		EA	1
4	R12312814	R12312814	A0185	.PLATE		EA	4
5	R12354120	59446698	E0017	.CREW KEY SWITCH ASSY, END DOOR, OUTSIDE - SEE FIG. 4-1 FOR NHA		EA	1
6	R123127022	NO 10-24 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304		EA	8
7	R12312892	R12312892	A0185	.DOOR, EMERGENCY OPENING - SEE FIG. 2-19 FOR DETAILS		EA	1
8	R123127027	NO 10-24 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 10-24 UNCx5/8 ANSI B18.6.3- SSTL AISI 304		EA	6
9	R123127026	NO 10 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
10	R123127025	NO 10 ANSI B27.2-S	Z9009	.WASHER, PLAIN - NO 10 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	2
11	R12466108	N840-5410-001	B0023	.SPEAKER, EXTERIOR (A15) - SEE FIG. 12-1 FOR NHA		EA	1
12	R12312813	R12312813	A0185	.PLATE		EA	1
13	R12354221	59641345	E0017	.CREW KEY SWITCH ASSY, CTR DOOR, OUTSIDE - SEE FIG. 4-40 FOR DETAIL		EA	1
14	R12312732	R12312732	A0185	.SHEET		EA	1
15	R12312730	R12312730	A0185	.BAR, END		EA	1
16	R12312913	R12312913	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.12x145.67 - NEOPRENE, 70 SHORE		EA	1
17	R12312729	R12312729	A0185	.SHEET		EA	1
18	R12312725	R12312725	A0185	.REINFORCEMENT		EA	6
19	R12312720	R12312720	A0185	.FRAME		EA	1
20	R12312719	R12312719	A0185	.FRAME		EA	1
21	R12312908	R12312908	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x145.67 - NEOPRENE, 70 SHORE		EA	1

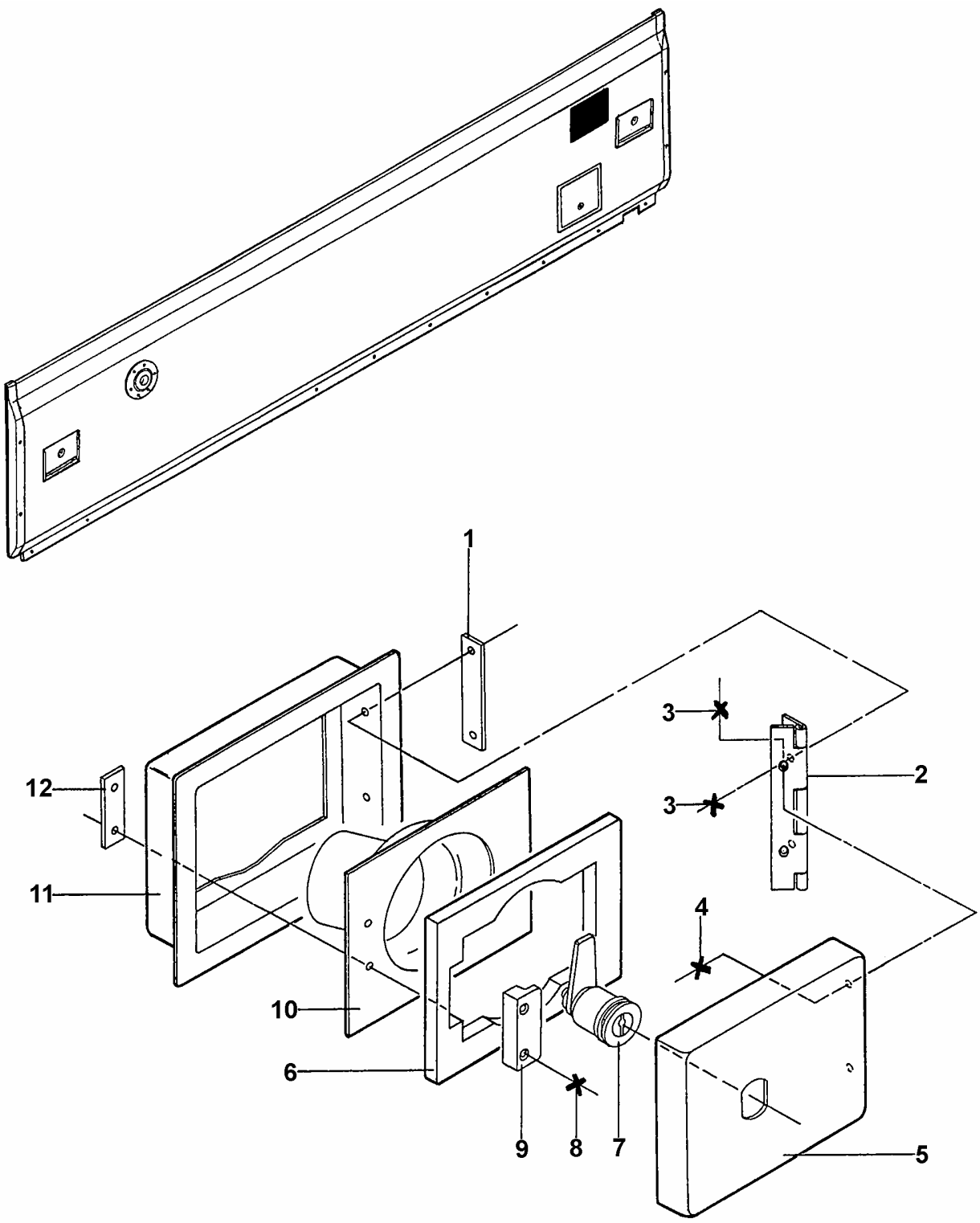

Figure 2-18 Door, Sand Box Fill-Up

Door, Sand Box Fill-Up (Fig. 2-18)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-018-	R12312875	R12312875	A0185	DOOR, SAND BOX FILL-UP - SEE FIG. 2-17 FOR NHA		EA	1
1	R12312904	R12312904	A0185	.PLATE		EA	1
2	R12312886	R12312886	A0185	.HINGE		EA	1
3	R123128752	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	4
4	R123128753	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	2
5	R12312884	R12312884	A0185	.COVER		EA	1
6	R12312903	R12312903	A0185	.GASKET		EA	1
7	R12312683	R12312683	A0185	.LOCK, TYPE C		EA	1
8	R123128754	NO 8-32 UNCx1 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3- SSTL AISI 304A		EA	2
9	R12312885	R12312885	A0185	.STRIKER		EA	1
10	R12312876	R12312876	A0185	.FUNNEL		EA	1
11	R12312879	R12312879	A0185	.FRAME		EA	1
12	R12312901	R12312901	A0185	.PLATE		EA	1

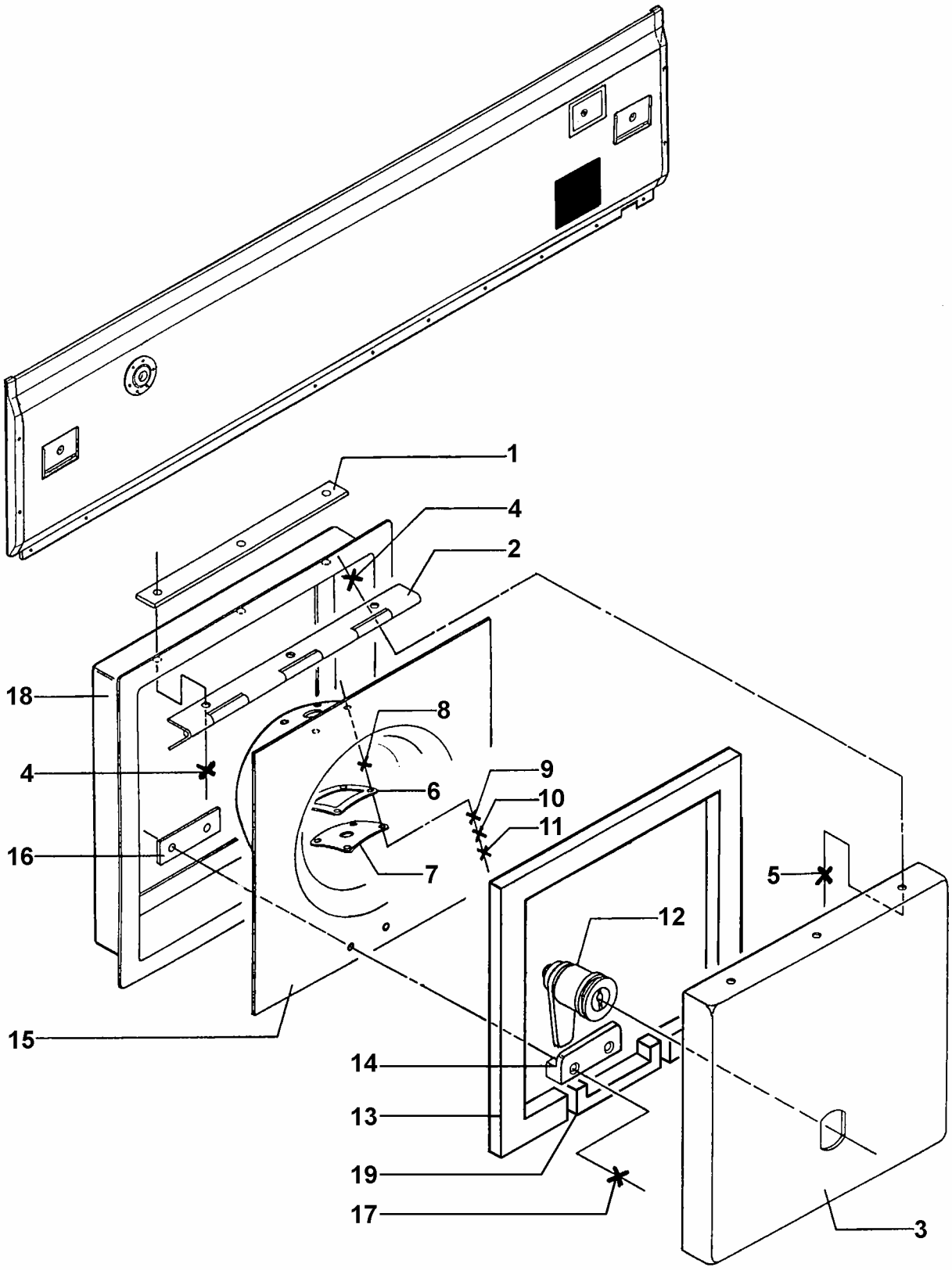

Figure 2-19 Door, Emergency Opening

Door, Emergency Opening (Fig. 2-19)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-019-	R12312892	R12312892	A0185	DOOR, EMERGENCY OPENING - SEE FIG. 2-17 FOR NHA		EA	1
1	R12312902	R12312902	A0185	.PLATE		EA	1
2	R12312777	R12312777	A0185	.HINGE		EA	1
3	R12312807	R12312807	A0185	.COVER		EA	1
4	R123128922	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	6
5	R123128923	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	3
6	R123128926	R123128926	A0185	.GASKET		EA	1
7	R12312637	R12312637	A0185	.PLATE		EA	1
8	R1231289210	NO 8 -UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8 -UNC - AISI 304		EA	4
9	R123128928	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI B27.2 - SSTL AISI 304		EA	4
10	R123128929	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
11	R123128927	NO 8-32 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	4
12	R12312684	R12312684	A0185	.LOCK, TYPE D		EA	1
13	R12312893	R12312893	A0185	.GASKET		EA	1
14	R12312885	R12312885	A0185	.STRIKER		EA	1
15	R12312809	R12312809	A0185	.CAP		EA	1
16	R12312901	R12312901	A0185	.PLATE		EA	1
17	R123128924	NO 8-32 UNCx1 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3- SSTL AISI 304A		EA	2
18	R12312778	R12312778	A0185	.FRAME		EA	1
19	R12312894	R12312894	A0185	.GASKET		EA	1

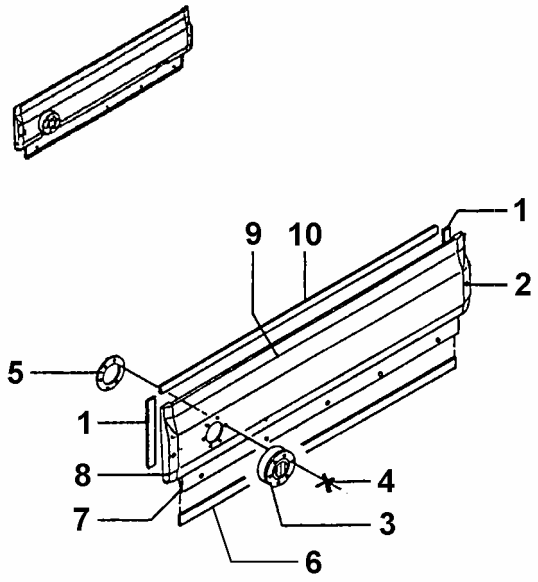

Figure 2-20 Panel Assy, Upper

Panel Assy, Upper (Fig. 2-20)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-020-	R12312718	R12312718	A0185	PANEL ASSY, UPPER - SEE FIG. 2-8 FOR NHA		EA	1
1	R12312990	R12312990	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x8.43 - NEOPRENE, 70 SHORE		EA	2
2	R12312774	R12312774	A0185	.BAR, END		EA	1
3	R12354222	59631343	E0017	.PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
4	R123127123	NO 10-24 UNCx1-1/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1-1/4 ANSIB18.6.3-SSTLAISI3		EA	6
5	R12312867	R12312867	A0185	.PLATE, FASTENING		EA	1
6	R12312991	R12312991	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.97 - NEOPRENE, 70 SHORE		EA	1
7	R12312791	R12312791	A0185	.SHEET		EA	1
8	R12312775	R12312775	A0185	.BAR, END		EA	1
9	R12312772	R12312772	A0185	.PANEL		EA	1
10	R12312989	R12312989	A0185	.GASKET, SELF-STICKING ON ONE SIDE - 0.79x0.20x51.77 - NEOPRENE, 70 SHORE		EA	1

Exterior Mirror Installation (Fig. 2-21)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-021-	R12965910	R12965910	A0185	EXTERIOR MIRROR INSTALLATION		EA	1
1	R12965912	R12965912	A0185	.ARM ASSEMBLY		EA	2
2	R12965911	193.2.070	B0012	.MIRROR, STEAMLINED		EA	2
3	R129659101	1/4-20 UNCx3/4 ANSI B18.3aS	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD -1/4-20 UNCx3/4 ANSI B18.3-SSTLAISI304		EA	8
4	R129659103	1/4STC515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515 - TYPE S STC 515		EA	8
5	R129659102	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514--ATT.PT TYPES STC 514		EA	8

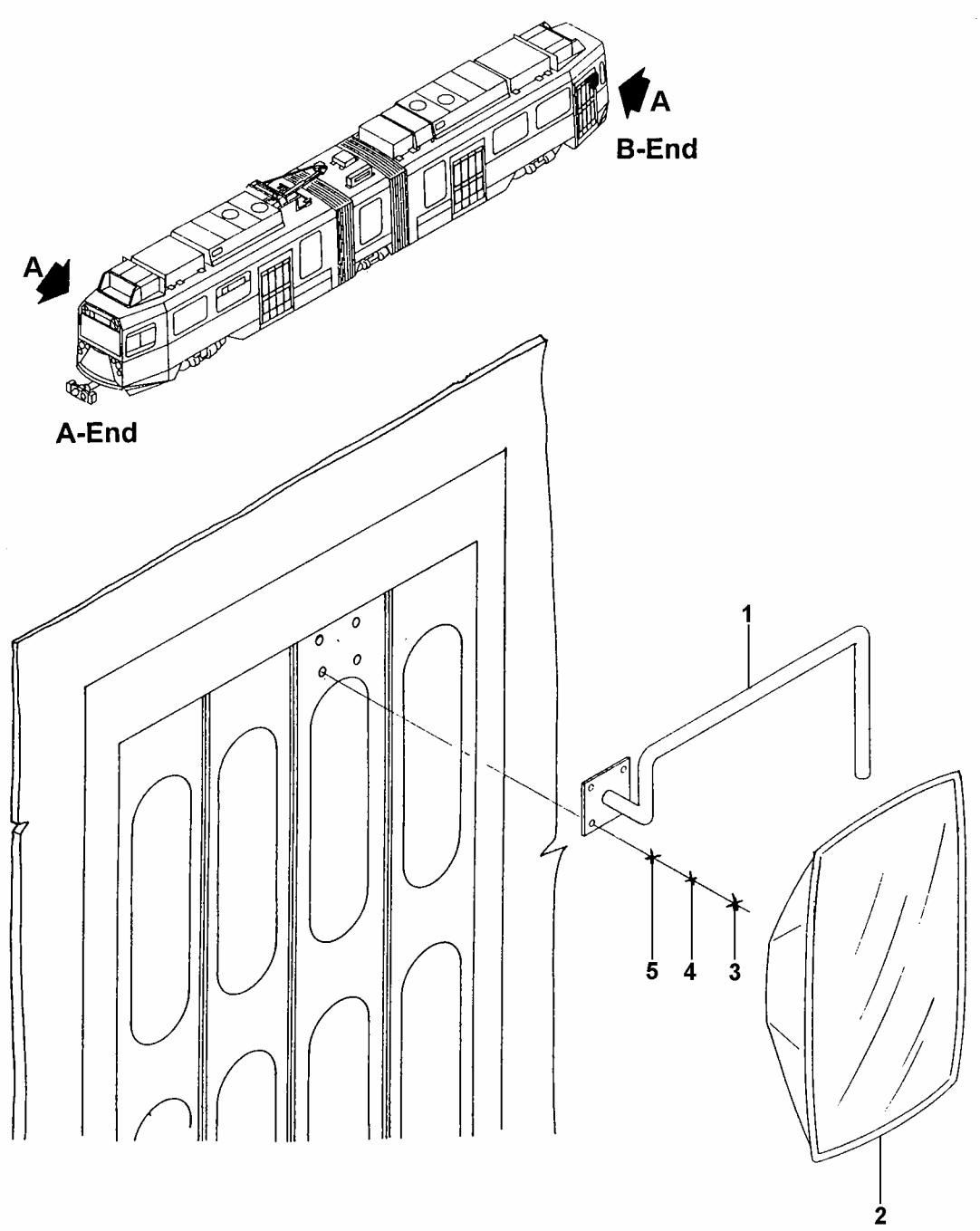

Figure 2-21 Exterior Mirror Installation

Exterior Mirror Installation (Fig. 2-21)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-021-	R12965910	R12965910	A0185	EXTERIOR MIRROR INSTALLATION		EA	1
1	R12965912	R12965912	A0185	.ARM ASSEMBLY		EA	2
2	R12965911	193.2.070	B0012	.MIRROR, STEAMLINED		EA	2
3	R129659101	1/4-20 UNCx3/4 ANSI B18.3aS	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD -1/4-20 UNCx3/4 ANSI B18.3-SSTLAISI304		EA	8
4	R129659103	1/4STC515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515 - TYPE S STC 515		EA	8
5	R129659102	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514--ATT.PT TYPES STC 514		EA	8

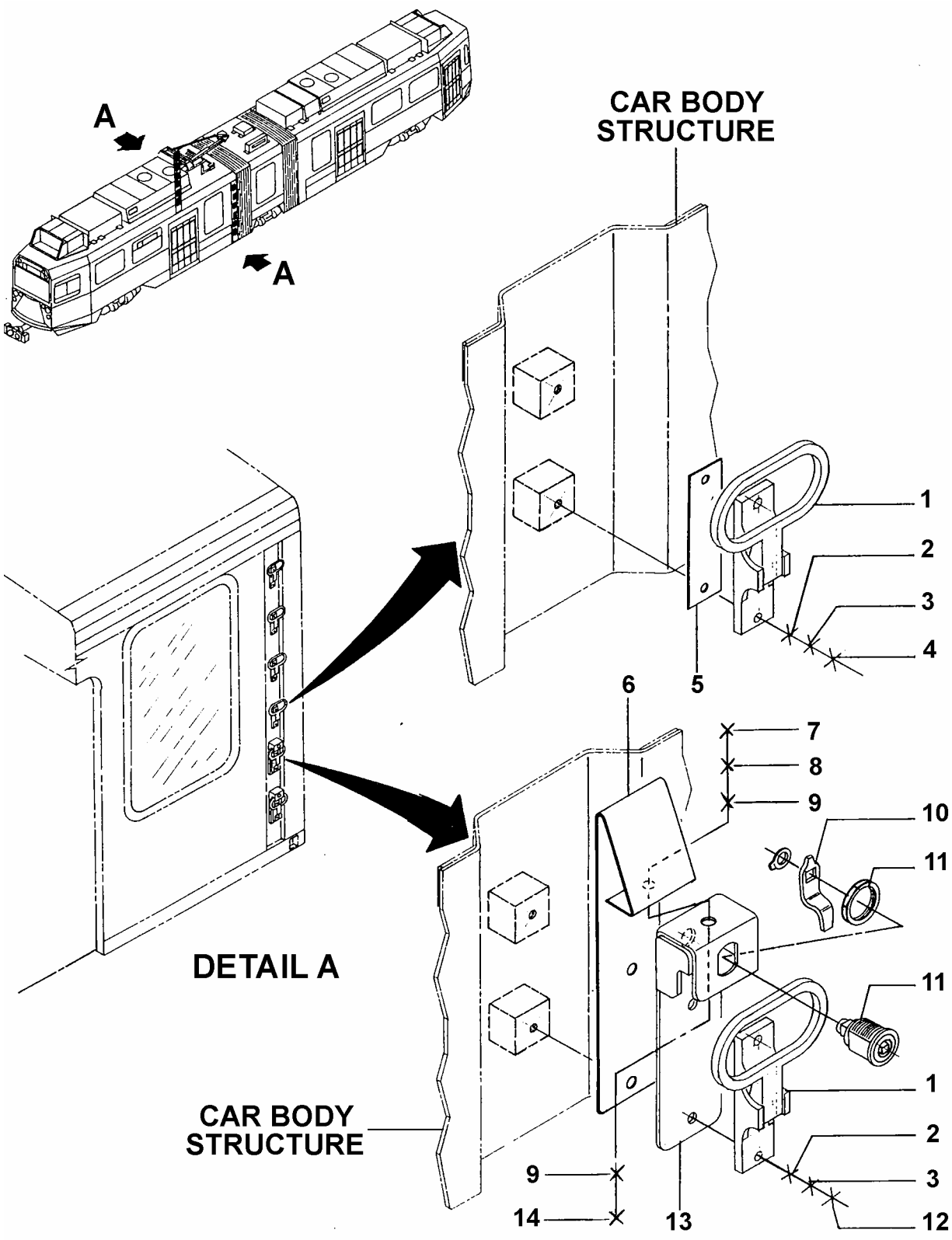

Figure 2-22 Folding Steps Layout

Folding Steps Layout (Fig. 2-22)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-022-	R12390100	R12390100	A0185	FOLDING STEPS LAYOUT		EA	2
1	R12390101	R12390101	A0185	.LADDER HOLDER		EA	6
2	R123901002	5/16 STC 514-S	Z9009	.WASHER, PLAIN - 5/16 STC 514 - ATT.PT - TYPES STC 514		EA	12
3	R123901003	5/16 STC 515-S	Z9009	.WASHER, HEL SPRING - 5/16 - ATT.PT STC 515 - TYPE S STC 515		EA	12
4	R123901001	5/16x1 STC 507-S	Z9009	.BOLT, HEX - 5/16x1 STC 507 - - ATT.PT TYPE S STC 507		EA	8
5	R12390102	R12390102	A0185	.SUPPORT		EA	4
6	R12390111	R12390111	A0185	.SUPPORT		EA	2
7	R123901009	NO 10 STC 542 -S	Z9009	.NUT, HEX - NO 10 STC 542 - - ATT.PT TYPE S STC 542		EA	4
8	R123901008	NO 10 STC 515-S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT STC 515-TYPES STC 515		EA	4
9	R123901007	NO 10 STC 514-S	Z9009	.WASHER, PLAIN - NO 10 STC - ATT.PT 514-TYPES STC 514		EA	8
10	R12390110	R12390110	A0185	.PAWL		EA	2
11	R12312684	R12312684	A0185	.LOCK, TYPE D		EA	2
12	R123901004	5/16x1-1/4 STC 507-S	Z9009	.BOLT, HEX - 5/16x1 -1/4 STC 507 - ATT.PT - TYPE S STC 507		EA	4
13	R12390105	R12390105	A0185	.SUPPORT		EA	2
14	R123901006	NO 10x5/8 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT NO 10x5/8 STC 510 - TYPE S STC 510		EA	4
15	R123901004	NO 10 STC 514-S	Z9009	.PAWL		EA	2
16	R123901004	R12390110	A0185	.SUPPORT		EA	2

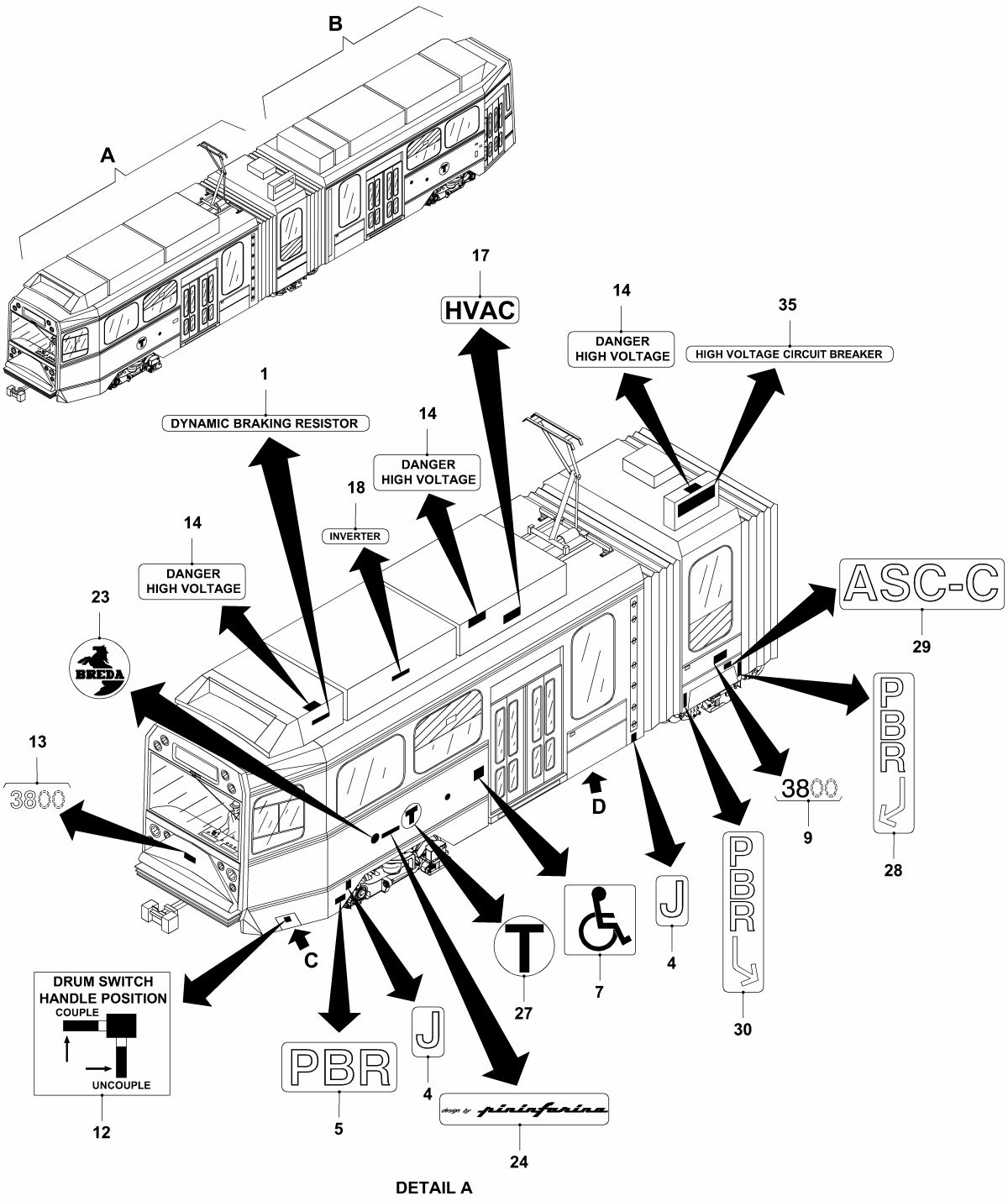

Figure 2-23 Exterior Decals Arrangement (Sheet 1 of 4)

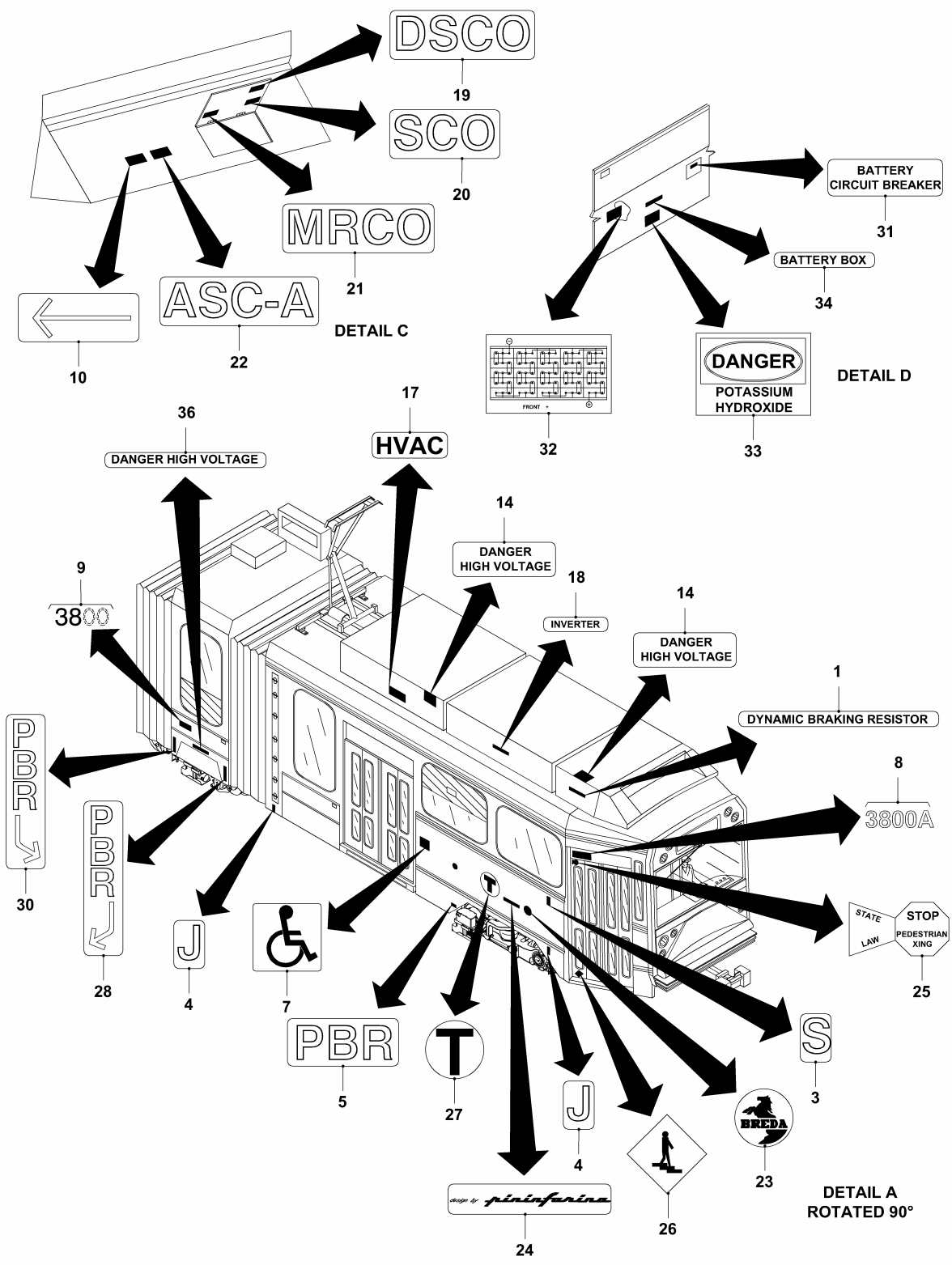

Figure 2-23 Exterior Decals Arrangement (Sheet 2 of 4)

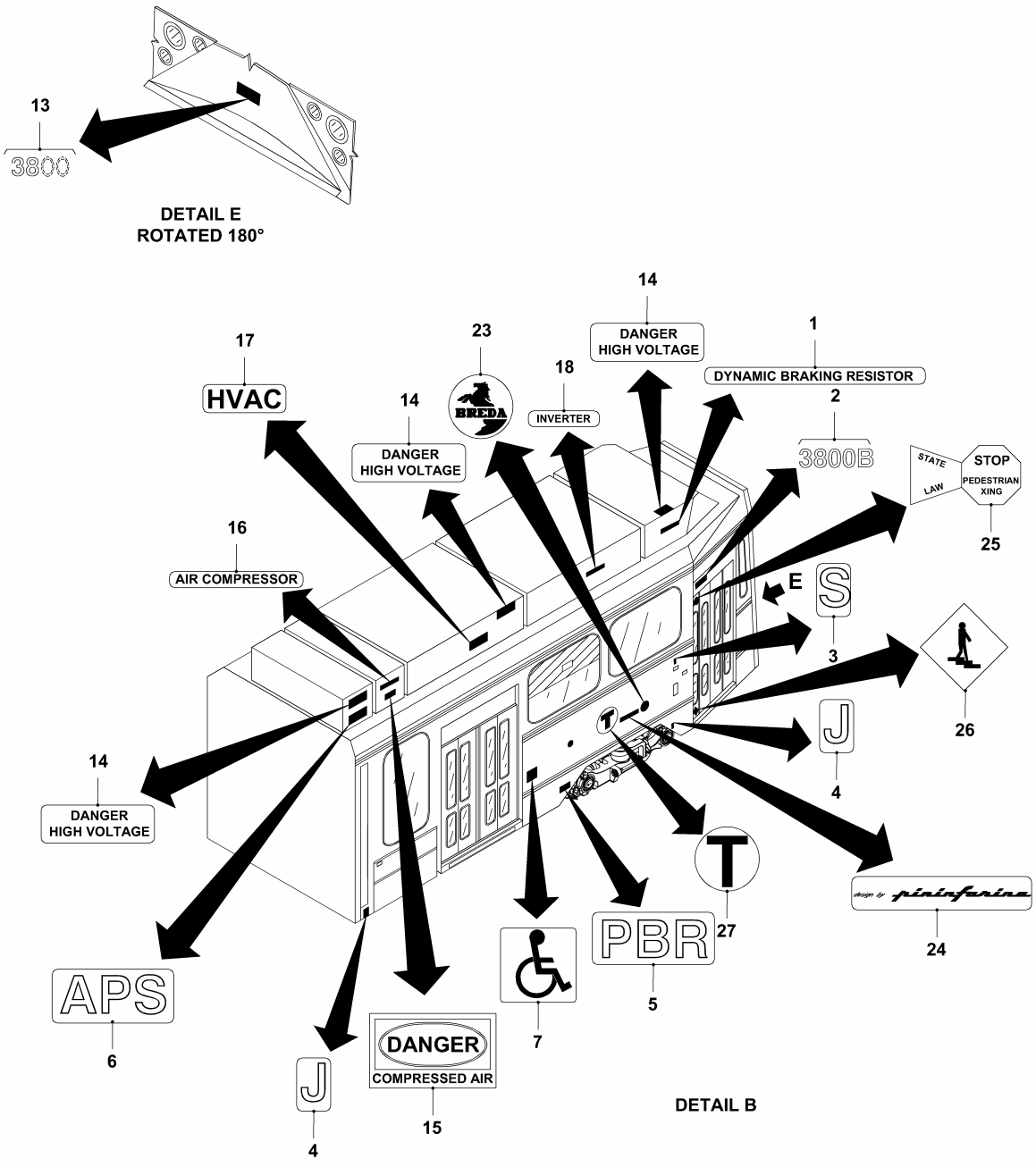

Figure 2-23 Exterior Decals Arrangement (Sheet 3 of 4)

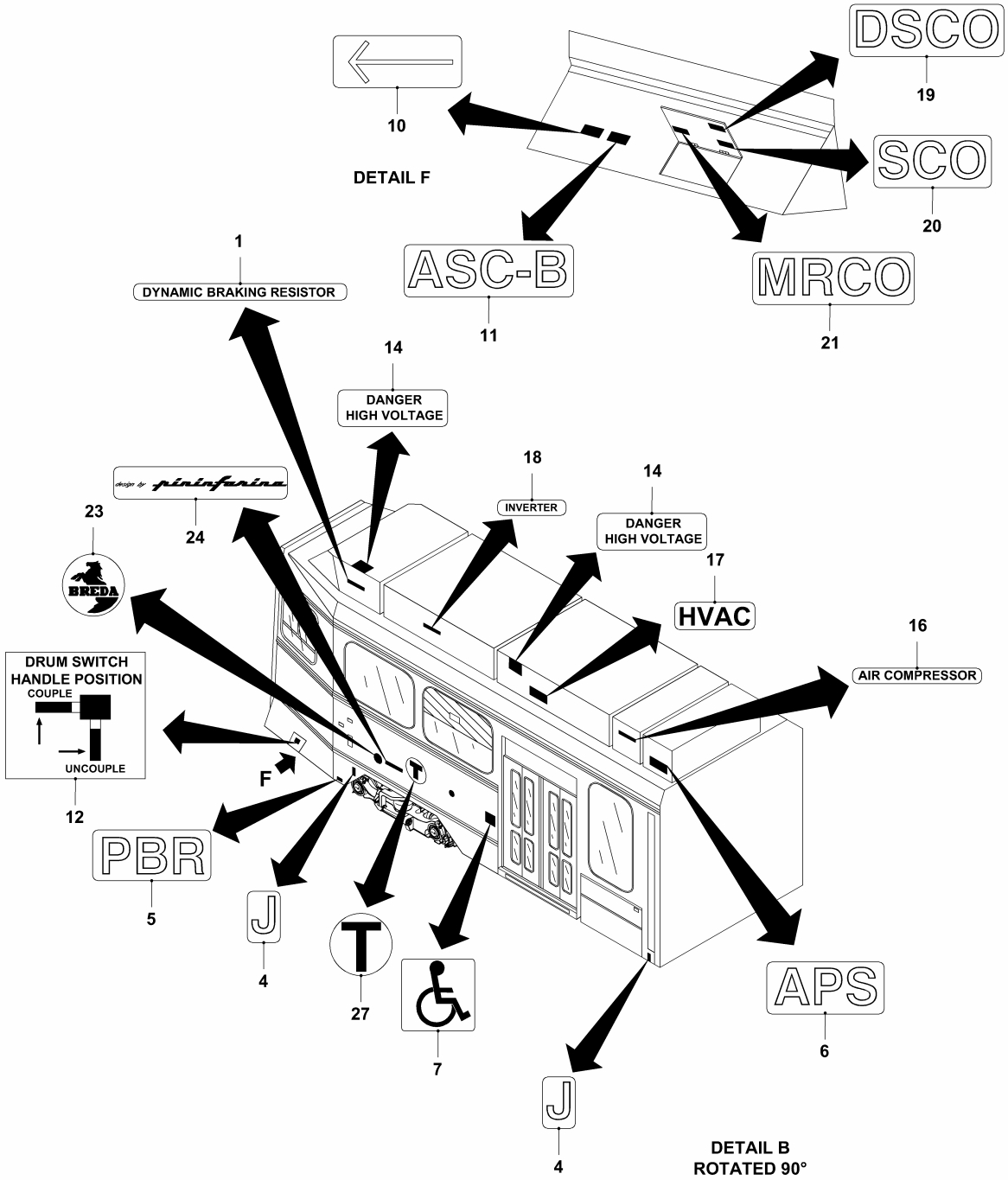

Figure 2-23 Exterior Decals Arrangement (Sheet 4 of 4)

Exterior Decals Arrangement (Fig. 2-23)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-023-	R12989000	R12989000	A0185	EXTERIOR DECALS ARRANGEMENT		EA	1
1	R12989041	R12989041	A0185	TAG, DYNAMIC BRAKING RESISTOR		EA	4
2	R12989035	R12989035	A0185	.DECAL, CAR NUMBERS		EA	1
3	R12989015	R12989015	A0185	.DECAL, SAND BOX 'S'		EA	2
4	R12989007	R12989007	A0185	.DECAL, JACK LOCATION 'J'		EA	8
5	R12989009	R12989009	A0185	.DECAL, PARKING BRAKE RELEASE 'PBR'		EA	4
6	R12989044	R12989044	A0185	TAG, APS		EA	2
7	R12989012	R12989012	A0185	.DECAL, HANDICAP		EA	4
8	R12989034	R12989034	A0185	.DECAL, CAR NUMBERS		EA	1
9	R12989053	R12989053	A0185	TAG, CAR NUMBER		EA	2
10	R12989051	R12989051	A0185	TAG, PBR (ARROW)		EA	2
11	R12989005	R12989005	A0185	.DECAL, AIR SPRING CUT-OUT 'ASC-B'		EA	1
12	R12989052	R12989052	A0185	TAG, DRUM SWITCH HANDLE POSITION		EA	2
13	R12989002	R12989002	A0185	.DECAL, CAR NUMBERS		EA	2
14	R12989016	R12989016	A0185	.DECAL, 'DANGER HIGH VOLTAGE'		EA	10
15	R12989056	R12989056	A0185	TAG, DANGER COMPRESSED AIR		EA	1
16	R12989046	R12989046	A0185	TAG, AIR COMPRESSOR		EA	2
17	R12989043	R12989043	A0185	TAG, HVAC		EA	4
18	R12989042	R12989042	A0185	TAG, INVERTER		EA	4
19	R12989037	R12989037	A0185	.DECAL, DRUM SWITCH CUT OUT 'DSCO'		EA	2
20	R12989040	R12989040	A0185	.DECAL, SANDER CUT OUT 'SCO'		EA	2
21	R12989039	R12989039	A0185	.DECAL, MAIN RESERVOR CUT OUT 'MRCO'		EA	2
22	R12989004	R12989004	A0185	.DECAL, AIR SPRING CUT-OUT 'ASC-A'		EA	1
23	R12989017	R12989017	A0185	.DECAL, LOGO 'BREDA'		EA	4
24	R12989013	R12989013	A0185	.DECAL, LOGO 'PININFARINA'		EA	4
25	R12989054	R12989054	A0185	TAG, PEDESTRIAN CROSSING		EA	2
26	R12989055	R12989055	A0185	TAG, STEP		EA	2
27	R12989003	R12989003	B0001	.DECAL, MBTA "T" - (MBTA SUPPLY)		EA	4
28	R12989011	R12989011	A0185	.DECAL, PARKING BRAKE RELEASE 'PBR'		EA	2
29	R12989006	R12989006	A0185	.DECAL, AIR SPRING CUT-OUT 'ASC-C		EA	1
30	R12989010	R12989010	A0185	.DECAL, PARKING BRAKE RELEASE 'PBR'		EA	2
31	R12989008	R12989008	A0185	.DECAL, 'BATTERY CIRCUIT BREAKER'		EA	1
32	R12989047	R12989047	A0185	TAG,BATTERY		EA	1
33	R12989032	R12989032	A0185	.DECAL, 'DANGER POTASSIUM HIDROXIDE'		EA	1
34	R12989014	R12989014	A0185	.DECAL, 'BATTERY BOX'		EA	1
35	R12989045	R12989045	A0185	TAG, HIGH VOLTAGE CIRCUIT BREAKER		EA	1
36	R12989033	R12989033	A0185	.DECAL, 'DANGER HIGH VOLTAGE'		EA	1
37	R12989031	R12989031	A0184	DECAL, 'BATTERY BOX'		EA	1

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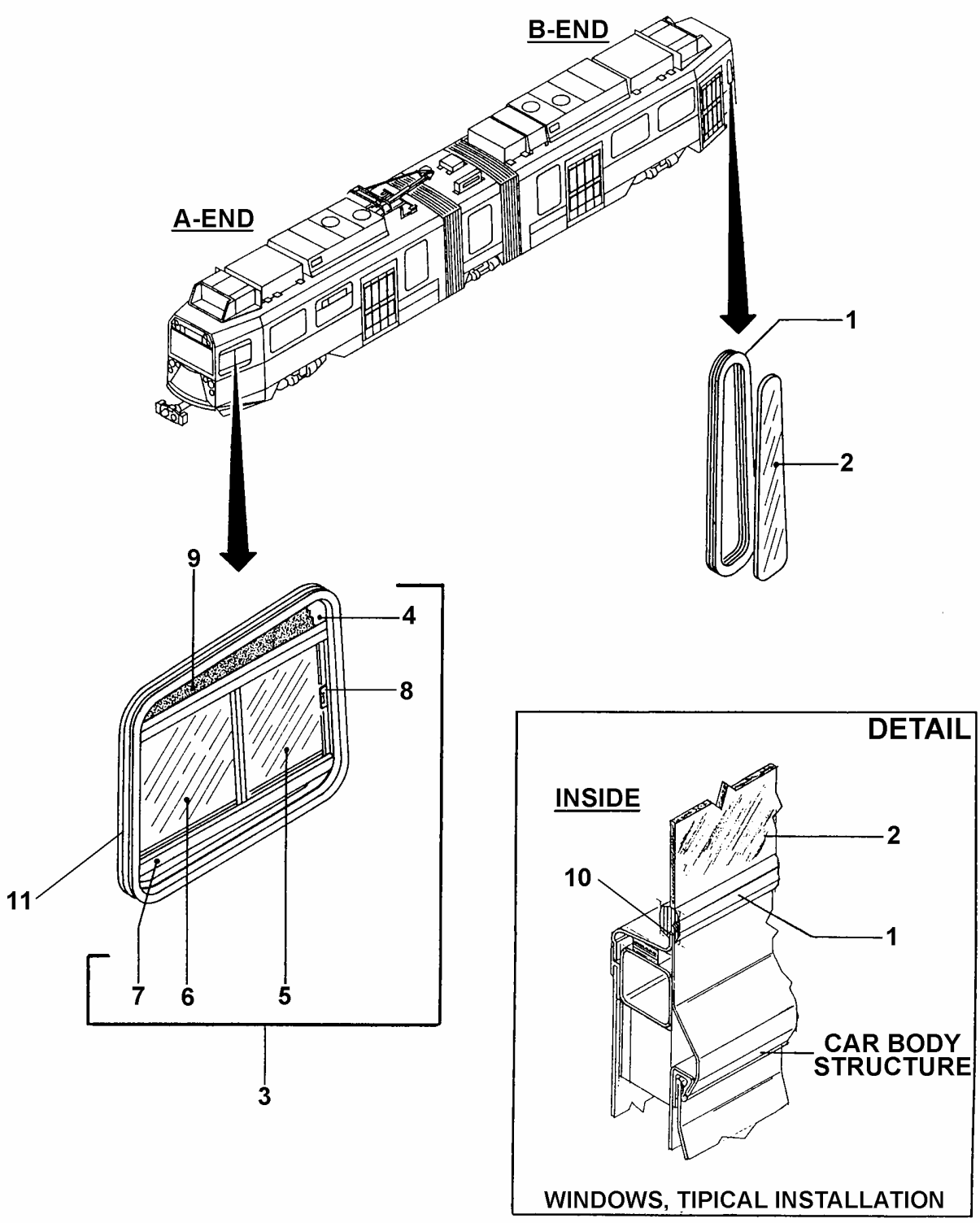

Figure 2-24 Windows, Side, Assy

Windows, Side, Assy (Fig. 2-24)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-024-	R12362000	R12362000	A0185	WINDOWS, SIDE, ASSY		EA	1
1	R12362015	R12362015	A0185	.RUBBER, GLAZING		EA	2
2	R12362040	R12362040	A0185	.WINDOW, SAFETY GLASS, CAB RH SIDE		EA	2
3	R12360100	14145	F7707	.WINDOW, CAB LEFT SIDE		EA	2
4	14145/4	14145/4	F7707	..UPPER GLASS		EA	1
5	14145/2	14145/2	F7707	..SLIDING GLASS		EA	1
6	14145/1	14145/1	F7707	..FIXED GLASS		EA	1
7	14145/3	14145/3	F7707	..LOWER GLASS		EA	1
8	14145/5	14145/5	F7707	..LATCH, SLIDING WINDOW		EA	1
9	R12362071	R12362071	A0185	.ADHESIVE FILM		EA	2
10	R12362001	R12362001	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 0.78 x 0.003			AR
11	R12362002	R12362002	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 3.15 x 0.003		FT	32.8

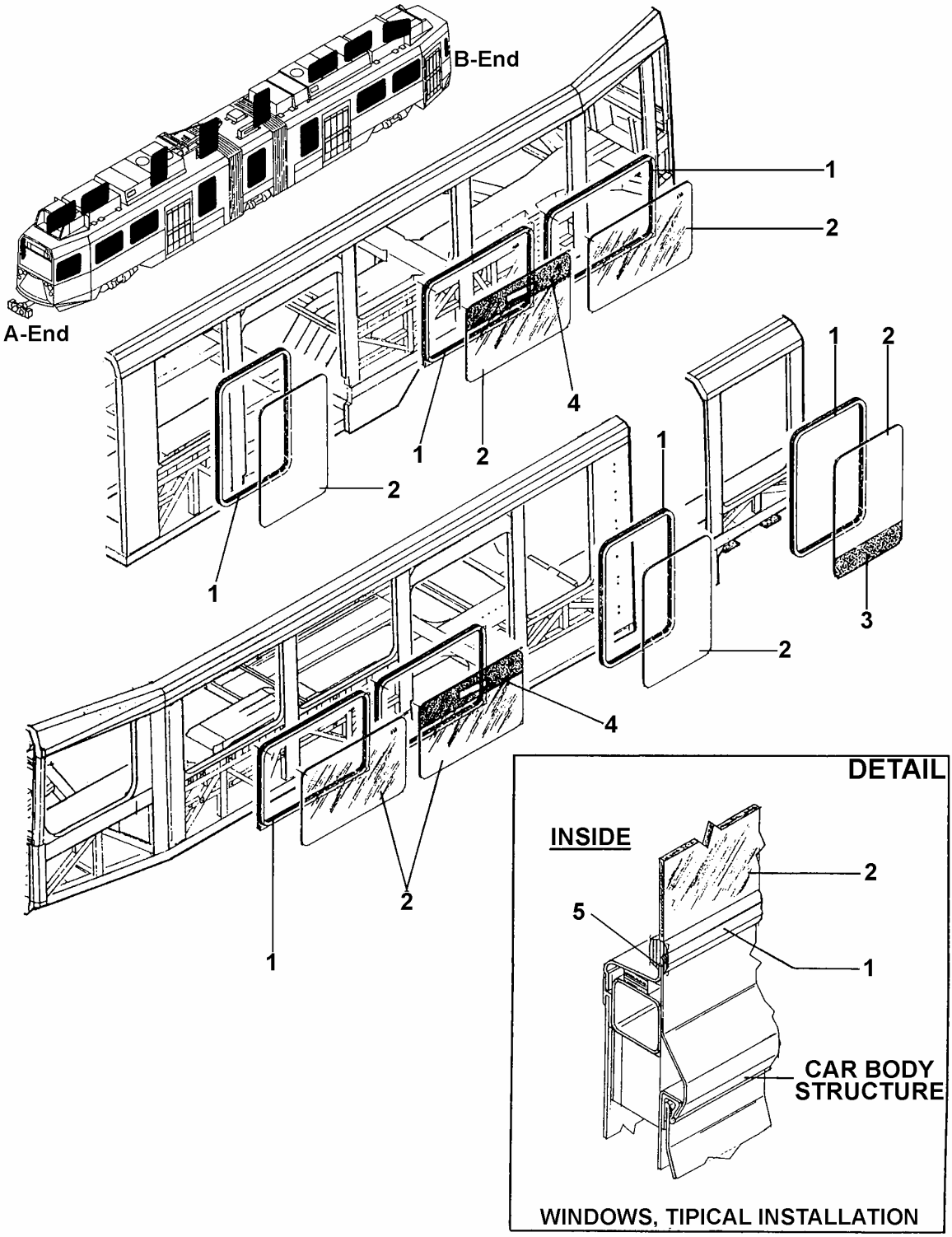

Figure 2-25 Windows, Side, Assy

Windows, Side, Assy (Fig. 2-25)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-25-	R12362000	R12362000	A0185	WINDOWS, SIDE, ASSY		EA	1
1	R12362010	R12362010	A0185	.RUBBER GASKET (LOCKING STRIP INTEGRATED) (FOR SECTION OF GLAZING RUBBER SEE FILE 3.62.020 DWG. MBTA NO. 46188 SIZE B)		EA	14
2	R12362030	R12362030	A0185	.WINDOW, SAFETY GLASS		EA	14
3	R12362073	R12362073	A0185	.ADHESIVE FILM		EA	2
4	R12362075	R12362075	A0185	.ADHESIVE FILM		EA	4
5	R12362001	R12362001	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 0.78 x 0.003			AR

Windshield And Front Window Assy (Fig. 2-26)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-026-	R12362060	R12362060	A0185	WINDSHIELD AND FRONT WINDOW ASSY		EA	1
1	R12362125	R12362125	A0185	.RUBBER GASKET (LOCKING STRIP INTEGRATED)		EA	2
2	R12362120	R12362120	A0185	.WINDOW, FRONT		EA	2
3	R12362100	R12362100	A0185	.WINDSHIELD (DEFROSTER ELEMENT INCLUDED)		EA	2
4	R123621001	TRMBLK-001	B0017	..ELECTRICAL TERMINAL BLOCK		EA	1
5	R12362110	R12362110	A0185	.RUBBER GASKET		EA	2
6	R12362800	R12362800	A0185	.WINDSHIELD, FRAME		EA	2
7	R123620603	FW88-U0835	F1525	.RIVET NUT, CTSK HEX SHANK - ATT.PT -1/4-20 UNC-SSTL		EA	52
8	R123620602	1/4-L	B0002	.WASHER, LOCK, NYLTITE - ATT.PT HEAD SLEEVES -1/4		EA	52
9	R123620601	1/4-20 UNCx5/8 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT -1/4-20 UNCx5/8 ANSI B18.3 - SSTL AISI 304		EA	52
10	R12362063	R12362063	A0185	.ADHESIVE GASKET - WIDTH 1.57- THICK 0.12-LENGHT211.02		EA	1
11	R12362031	R12362031	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 0.78 x 0.003		FT	19.68

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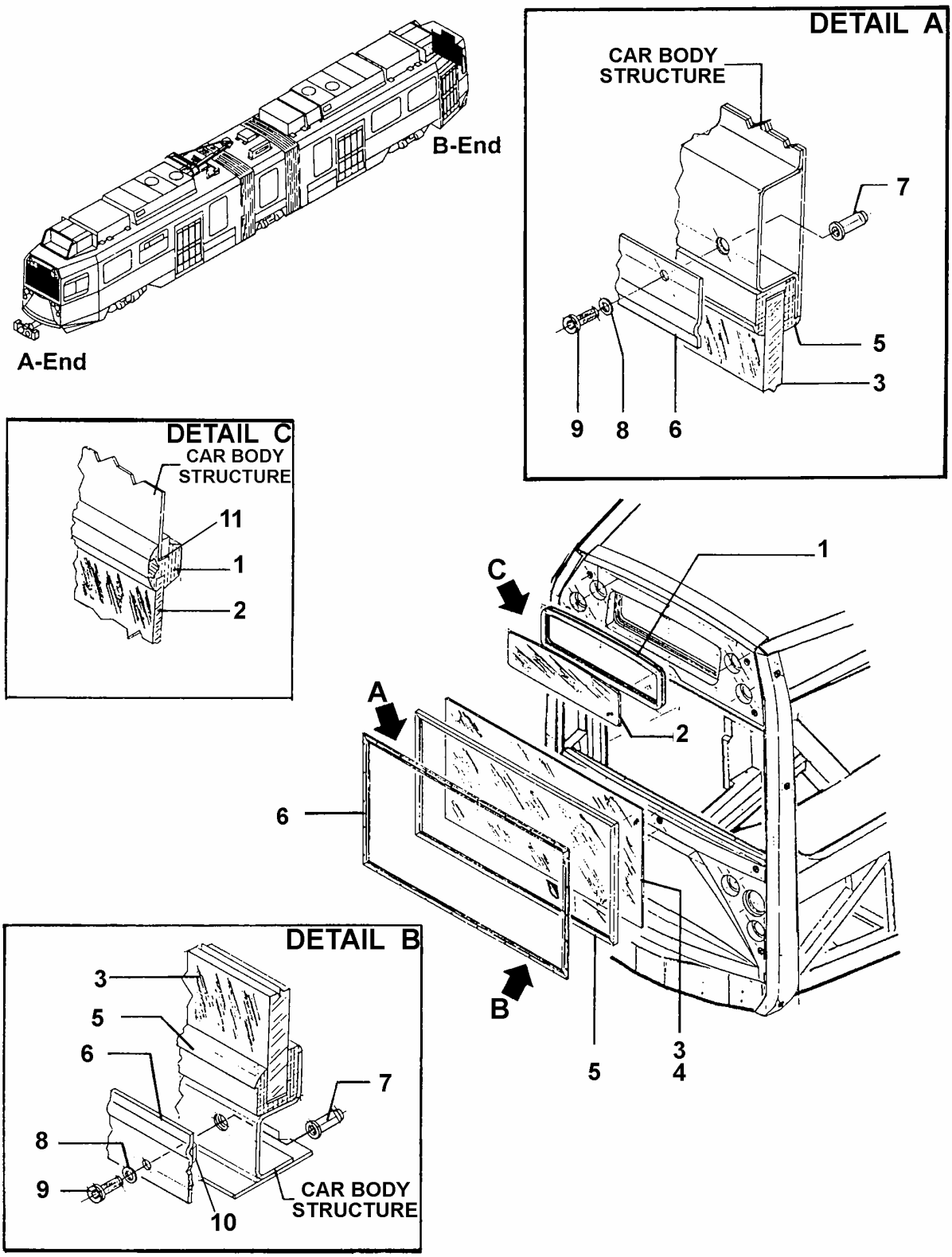
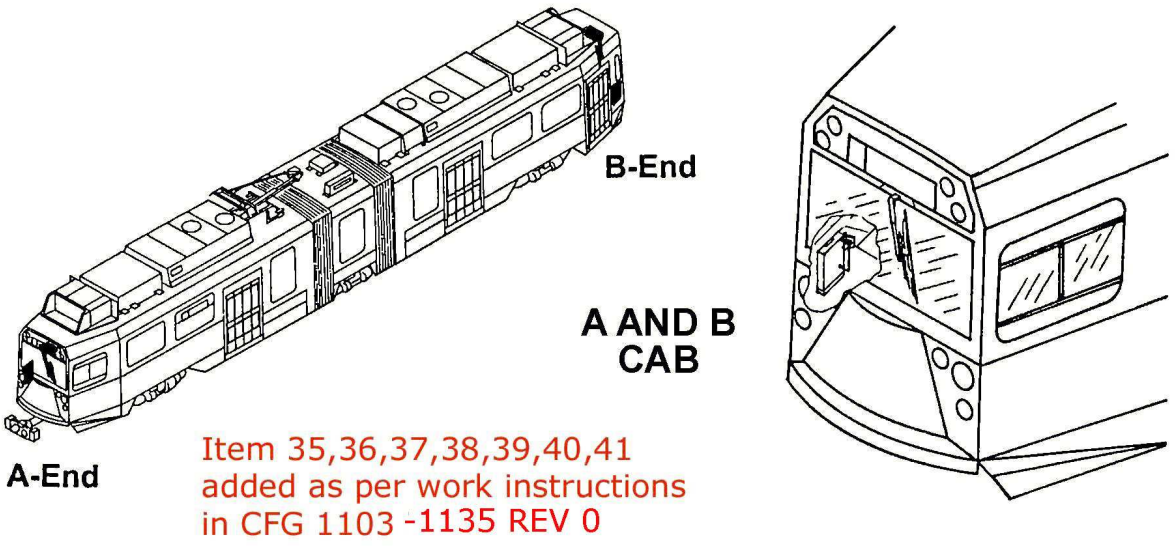


Figure 2-26 Windshield And Front Window Assy

Windshield And Front Window Assy (Fig. 2-26)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-026-	R12362060	R12362060	A0185	WINDSHIELD AND FRONT WINDOW ASSY		EA	1
1	R12362125	R12362125	A0185	.RUBBER GASKET (LOCKING STRIP INTEGRATED)		EA	2
2	R12362120	R12362120	A0185	.WINDOW, FRONT		EA	2
3	R12362100	R12362100	A0185	.WINDSHIELD (DEFROSTER ELEMENT INCLUDED)		EA	2
4	R123621001	TRMBLK-001	B0017	..ELECTRICAL TERMINAL BLOCK		EA	1
5	R12362110	R12362110	A0185	.RUBBER GASKET		EA	2
6	R12362800	R12362800	A0185	.WINDSHIELD, FRAME		EA	2
7	R123620603	FW88-U0835	F1525	.RIVET NUT, CTSK HEX SHANK - ATT.PT -1/4-20 UNC-SSTL		EA	52
8	R123620602	1/4-L	B0002	.WASHER, LOCK, NYLTITE - ATT.PT HEAD SLEEVES -1/4		EA	52
9	R123620601	1/4-20 UNCx5/8 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT -1/4-20 UNCx5/8 ANSI B18.3 - SSTL AISI 304		EA	52
10	R12362063	R12362063	A0185	.ADHESIVE GASKET - WIDTH 1.57- THICK 0.12-LENGHT211.02		EA	1
11	R12362031	R12362031	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 0.78 x 0.003		FT	19.68



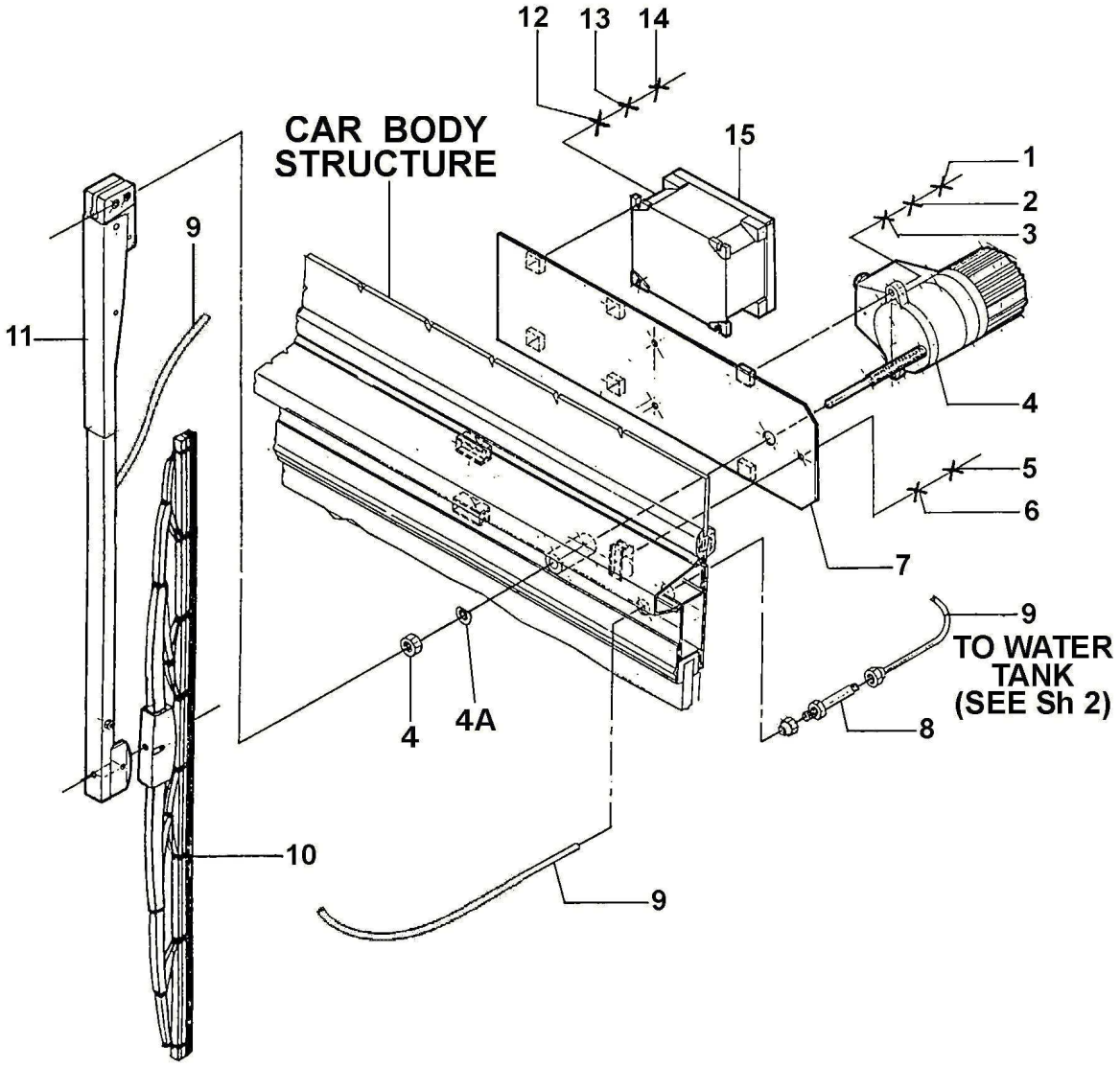


Figure 2-27 Windshield Wiper Assy (Sheet 1 of 2)

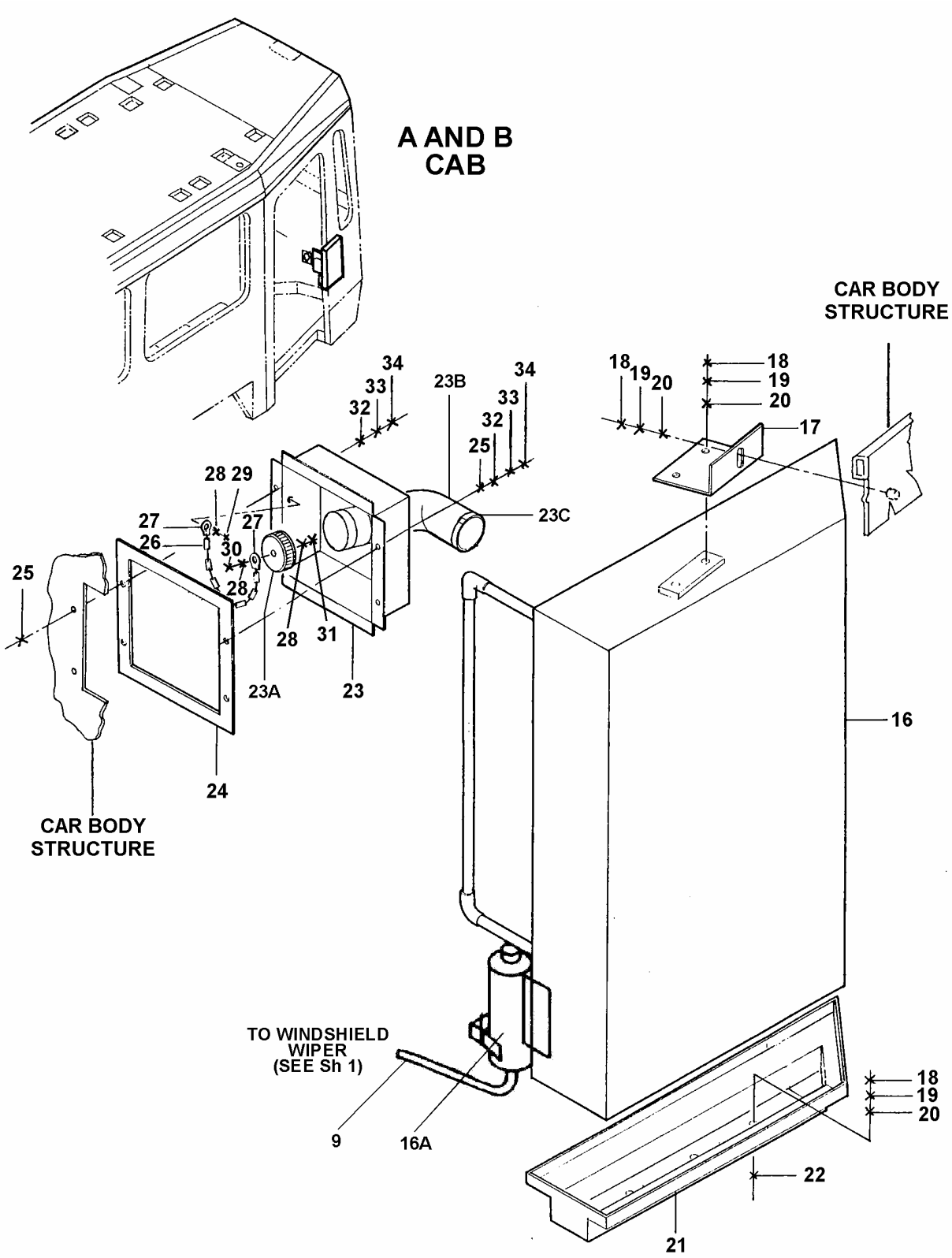


Figure 2-27 Windshield Wiper Assy (Sheet 2 of 2)

Windshield Wiper Assy (Fig. 2-27)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-027-	R12496700	R12496700	A0185	WINDSHIELD WIPER ASSY		EA	1
1	R124967308	5/16x1-1/4 STC 511 -N	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - 5/16x1 -1 /4 STC 511 - TYPE N STC 511		EA	4
2	R1249673010	5/16 STC 515-N	Z9009	.WASHER, HEL SPRING - 5/16 - ATT.PT STC 515 - TYPE N STC 515		EA	4
3	R124967303	5/16 STC 514-N	Z9009	.WASHER, PLAIN - 5/16 STC 514 - ATT.PT - TYPE N STC 514		EA	4
4	R12496716	MTRS.37.110.60	B0003	.MOTOR, WINDSHIELD WIPER		EA	2
4A	R12496750	R12496750	A0185	.WASHER, MODIFIED - ATT.PT		EA	2
5	R124967301	5/16x3/4 STC 511 -N	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT- 5/16x3/4 STC 511 - TYPE N STC 511		EA	4
6	R124967307	0.31x0.07 STC 536-89	Z9009	.WASHER, CONICAL SPRING - - ATT.PT 0.31x0.07 STC 536-89		EA	6
7	R12496701	R12496701	A0185	.MOUNTING PLATE		EA	2
8	R12496727	15602.60	B0003	JOINT		EA	2
9	R12496707	R12496707	A0185	.PIPE		EA	2
10	R12496703	TR.700	B0003	.WINDSHIELD WIPER BLADE		EA	2
11	R12496704	MT70.680.700	B0003	.WINDSHIELD WIPER ARM		EA	2
12	R124967304	NO 10 STC 514-N	Z9009	.WASHER, PLAIN - NO 10 STC - ATT.PT 514-TYPE N STC 514		EA	8
13	R124967309	NO 10 STC 515-N	Z9009	.WASHER, HEL SPRING -NO 10 - ATT.PT STC 515 - TYPE N STC 515		EA	8
14	R124967302	NO 10x7/8 STC 511 -N	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - NO 10 x7/8 STC 511 - TYPE N STC 511		EA	8
15	R12496702	CEVI.37	B0003	.CONTROL UNIT, WINDSHIELD WIPER		EA	2
16	R12496715	SERB.19.L1	B0003	TANK, WATER		EA	2
16A	SERB.19.L1/1	PPA.37	B0003	..PUMP, WATER TANK		EA	1
17	R12496720	SERB.19.L3	B0003	.BRACKET		EA	2
18	R1249673011	1/4x3/4 STC 507-N	Z9009	.BOLT, HEX - 1/4x3/4 STC 507 - TYPE N STC 507		EA	12
19	R124967306	1/4 STC 515-N	Z9009	.WASHER, HEL SPRING -1/4 STC 515 - TYPE N STC 515		EA	12
20	R124967305	1/4 STC 514-N	Z9009	.WASHER, PLAIN -1/4 STC 514 - TYPE N STC 514		EA	12
21	R12496725	R12496725	A0185	.SUPPORT, TANK		EA	2
22	R1249673012	1/4"-20	Z9009	.BUSHING -1/4"-20		EA	6
23	R12496710	SERB.19.L2	B0003	.DECKFILL, WATER		EA	2
23A	SERB.19.L2/1	SERB.19.L2/1	B0003	..PLUG, SCREW-1 1/4		EA	1
23B	SERB.19.L2/2	SERB.19.L2/2	B0003	..HOSE, RUBBER - 1.57x7.87		EA	1
23C	SERB.19.L2/3	SERB.19.L2/3	B0003	..CLAMP -1.97- STL ZNP		EA	2
24	R12496712	R12496712	A0185	.GASKET		EA	2
25	R1249673013	NO 6-32 UNCx5/8 ANSI B18.3bS	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 6-32 UNCx5/8 ANSI B18.3-SSTLAISI304		EA	8
26	R1249670017	FIG.72276	01973	.CHAIN, SQUARE LINK - LG=7.9		EA	2
27	R1249670018	FIG.72278	01973	.HOOK, 'S' TYPE		EA	4
28	R1249670021	NO 6 STC 514-S	Z9009	.WASHER, PLAIN - NO 6 STC - ATT.PT 514-TYPES STC 514		EA	6
29	R1249670022	0.12x0.39	Z9009	.RIVET, POP, SSD - 0.12x0.39 - - ATT.PT SSTL AISI 305		EA	2
30	R1249670019	NO 6x5/8 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT NO 6x5/8 STC 510 - TYPE S STC 510		EA	2

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-027- 31	R1249670020	NO6STC512-S	Z9009	.NUT, SELF-LOCKING - NO 6 - ATT.PT STC 512 - TYPE S STC 512		EA	2
32	R1249673014	NO6STC514-N	Z9009	.WASHER, PLAIN - NO 6 STC - ATT.PT 514 - TYPE N STC 514		EA	8
33	R1249673015	NO6STC515-N	Z9009	.WASHER, HEL SPRING - NO 6 - ATT.PT STC 515 - TYPE N STC 515		EA	8
34	R1249673116	NO6STC512-N	Z9009	.NUT, SELF-LOCKING - NO 6 - ATT.PT STC 512 - TYPE N STC 512		EA	8
35	R12496726	5/16"-18 MCMASTER-CAR NO. 90955A128		NUT RETAINER, ZINC PLATE STEEL NUT ALUMININUM RETAINER		EA	4
36	R12496730	1/8" DIA X 3/8" LONG		1/8" DIA X 3/8" LONG S/STEEL POP RIVET		EA	8
37	R1249673123	5/16 X 3/4 STC 507-T		HEX BOLT 5/16 X 3/4 LONG,STC 507, CARBON STEEL, TYPE T		EA	2
38		MCMASTER-CARR		HEX BOLT MCMASTER-CARR 97646A120 OR EQUIVALENT		EA	4
39		MCMASTER-CARR		FLAT WASHER MCMASTER-CARR 91950A029 OR EQUIVALENT		EA	4
40		MCMASTER-CARR		LOCK WASHER MCMASTER-CARR 92146A029 OR EQUIVALENT		EA	4
41		MCMASTER-CARR		LOCK NUT MCMASTER-CARR 90099A029 OR EQUIVALENT		EA	4

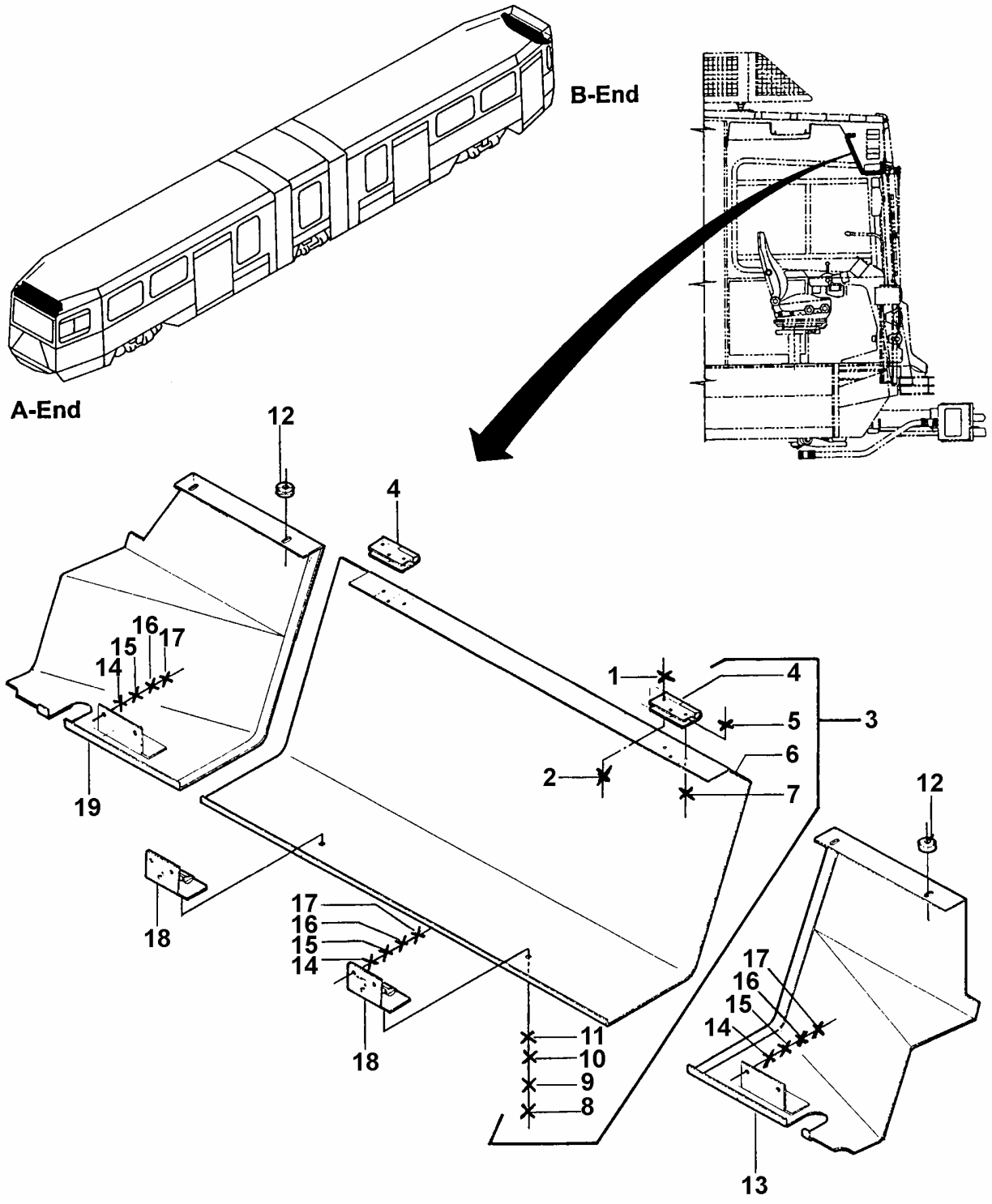


Figure 2-28 Cover, Cab Destination Sign

Cover, Cab Destination Sign (Fig. 2-28)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-028-	R12922850	R12922850	A0185	COVER, CAB DESTINATION SIGN		EA	1
1	R129228555	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	10
2	R129228556	NO 8-32 UNCx1-1/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1-1/8 ANSI B18.6.3 - SSTL AISI 30		EA	10
3	R12922852	R12922852	A0185	.COVER ASSY		EA	2
4	R12965061	R12965061	A0185	..HINGE, RIGHT		EA	2
5	R129228701	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	..SCREW, MACHINE, FLAT - ATT.PT CTSK HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	6
6	R12922854	R12922854	A0185	..COVER		EA	1
7	R129228702	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	6
8	R129228703	85-78-400-20	B0005	..PIVOT		EA	2
9	R129228704	85-34-301-12	B0005	..RETAINER		EA	2
10	R129228705	85-16-103-39	B0005	..WASHER		EA	2
11	R129228706	44-18-150-24	B0005	..SPRING		EA	2
12	R12961028	R12961028	A0185	.SPACER		EA	8
13	R12922853	R12922853	A0185	.PANEL, LH		EA	2
14	R129228552	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	16
15	R129228553	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	16
16	R129228557	NO 8 -UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8 -UNC		EA	16
17	R129228551	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	16
18	R12922809	R12922809	A0185	.BRACKET		EA	4
19	R12922851	R12922851	A0185	.PANEL, RH		EA	2
20	R12922852	NO 8 -UNC	B0005	..COVER		EA	16
21	R12922809	R12922854	A0185	..RETAINER		EA	2

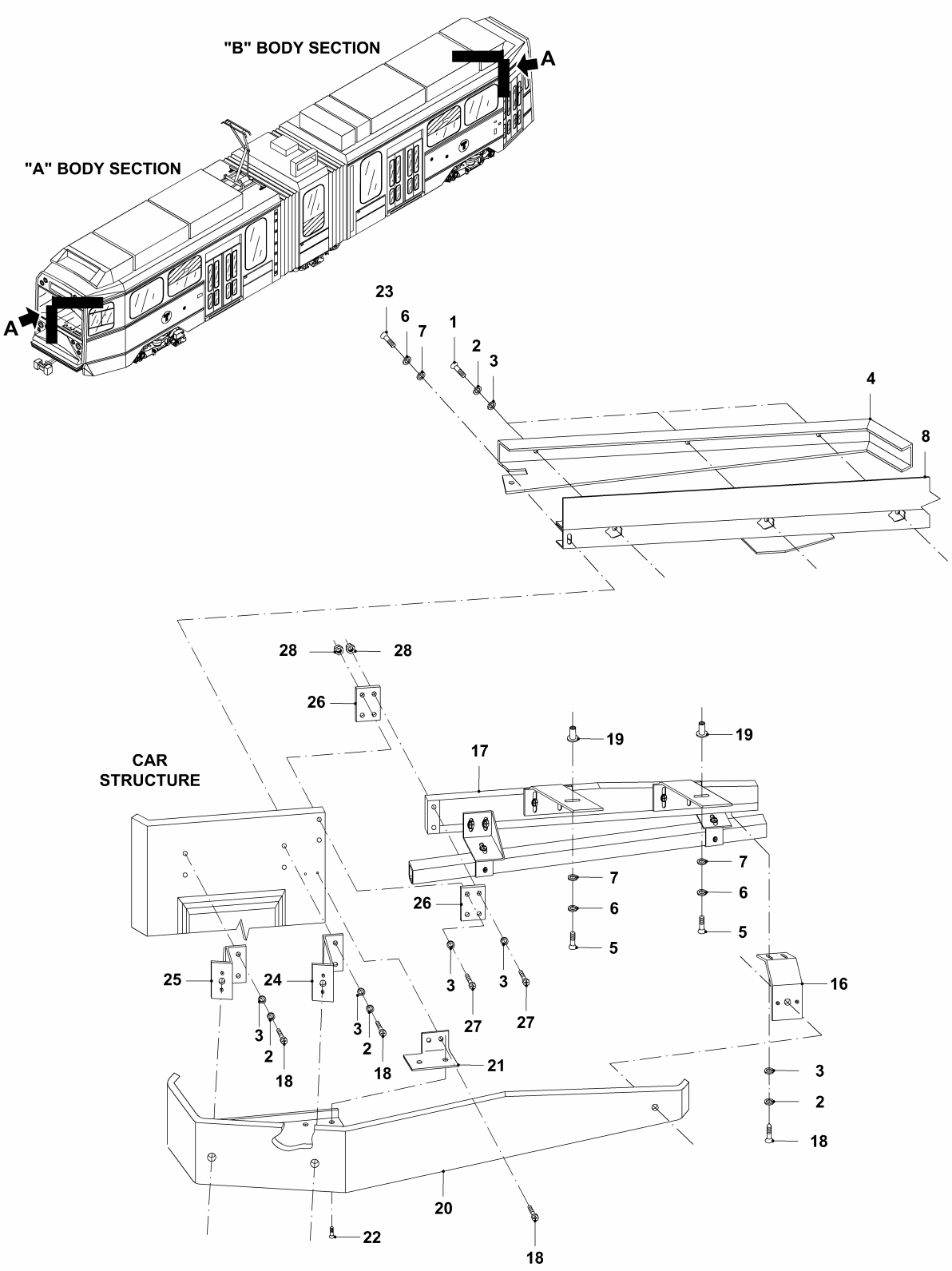


Figure 2-29 Cab Wall Assy (Sheet 1 of 2)

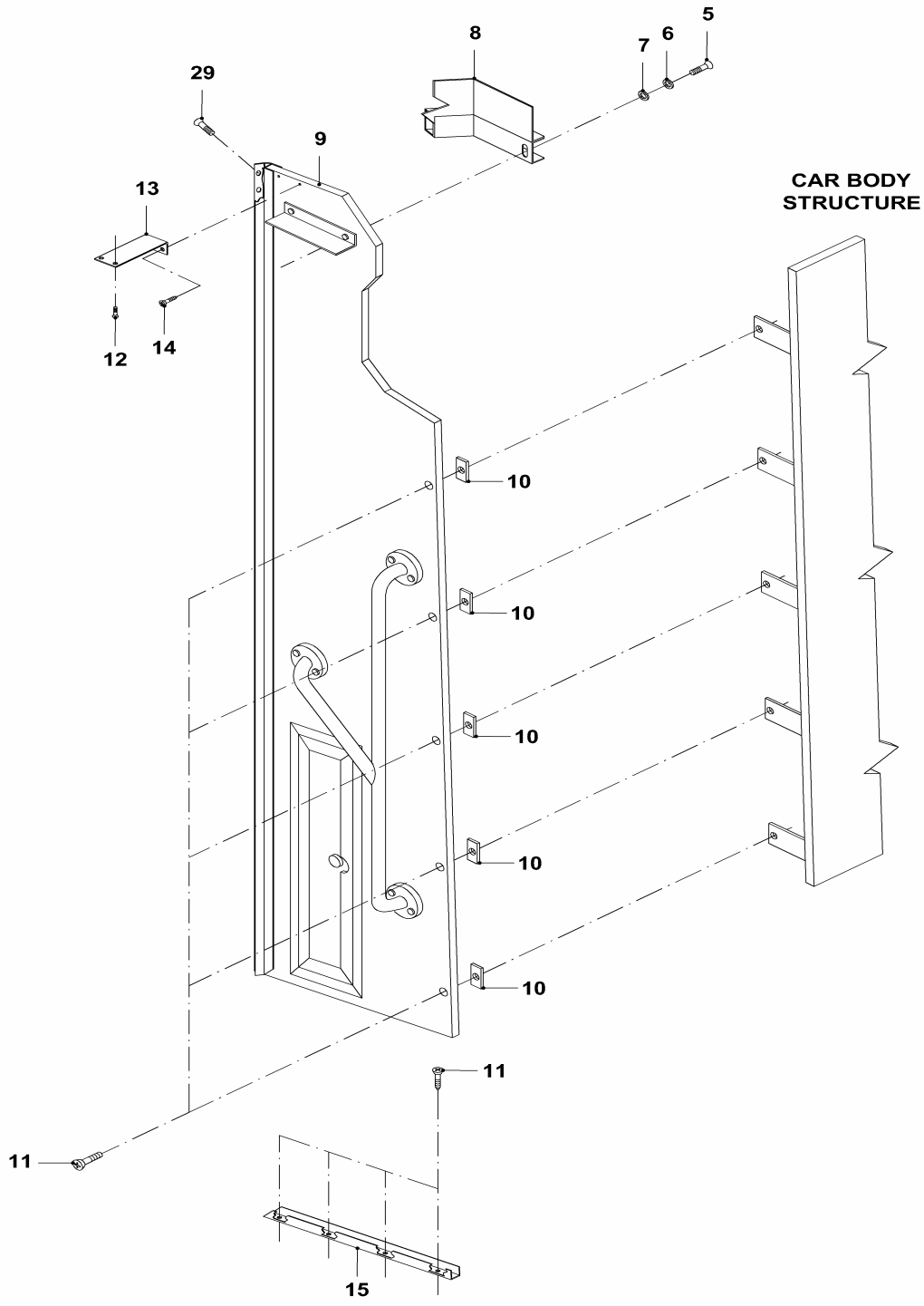


Figure 2-29 Cab Wall Assy (Sheet 2 of 2)

Cab Wall Assy (Fig. 2-29)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-029-	R12920701	R12920701	A0185	CAB WALL ASSY		EA	1
1	R1292097510	NO 8-32 UNCx3/4 ANSI B18.6.3d2S	Z9009	.SCREW, MACHINE, ROUND HD - ATT.PT TYPE IA REC - NO 8-32 UNCx3 /4 ANSI B18.6.3-SSTLAISI 304		EA	6
2	R129209754	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	20
3	R129209753	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	20
4	R12920744	R12920744	A0185	.COVER, GUIDE, CAB SIDE		EA	2
5	R129209755	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX -1 /4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	4
6	R129209757	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
7	R129209756	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	6
8	R12920955	R12920955	A0185	.STRUCTURE		EA	2
9	R12920901	R12920901	A0185	.PANEL, LATERAL - SEE FIG. 2-31 FOR DETAIL		EA	2
10	R1292097513	R1292097513	A0185	.GASKET		FT	3.28
11	R1292097514	NO 8-32 UNCx1 ANSI B18.6.4d4N	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4-STLZNP		EA	20
12	R1292097519	NO 8-32 UNCx3/4 ANSI B18.6.4dN	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx3/4 ANSI B18.6.4 - STL ZNP		EA	4
13	R12920983	R1292097512	A0185	.BRACKET - ATT.PT		EA	2
14	R1292097518	NO 8x5/8 ANSI B18.6.1a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8x5/8 ANSI B18.6.1 - SSTL AISI 304A		EA	4
15	R12920733	R12920733	A0185	.FRAME, HIGHER		EA	2
16	R12920731	R12920731	A0185	.BRACKET		EA	2
17	R12920900	R12920900	A0185	.HIGHER PANEL ASSY, DIVIDING WALL - SEE FIG. 2-30 FOR DETAIL		EA	2
18	R129209752	NO 8x3/4 ANSI B18.6.1c1S	Z9009	.SCREW, WOOD, ROUND HD - ATT.PT TYPE IA REC - NO 8x3/4 ANSI B18.6.1 - SSTL AISI 304A		EA	12
19	R129209758	1/4-UNC-R	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT 1/4-UNC		EA	4
20	R12920727	R12920727	A0185	.GUIDE COVER		EA	2
21	R12920738	R12920738	A0185	.BRACKET		EA	2
22	R1292097517	NO 8x5/8 ANSI B18.6.1a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8x5/8 ANSI B18.6.1 - SSTL AISI 304A		EA	4
23	R129209759	1/4-20 UNCx1 ANSI B18.2.1cS	Z9009	.SCREW, HEX -1/4-20 UNCx1 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	2
24	R12920951	R12920951	A0185	.BRACKET		EA	2
25	R12920952	R12920952	A0185	.BRACKET		EA	2
26	R12920974	R12920974	A0185	.PLATE		EA	4
27	R1292097515	NO 8x1-1/8 ANSI B18.6.1 a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8x1-1/8 ANSI B18.6.1 - SSTL AISI 304A		EA	8
28	R1292097516	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
29	R12920727	R12920900	A0185	BRACKET		EA	2

Cab Wall Assy (Fig. 2-29)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-029- 29	R1292097512	NO 8x3/4 ANSI B18.6.1a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8x3/4 ANSI B18.6.1 - SSTL AISI 304A		EA	4

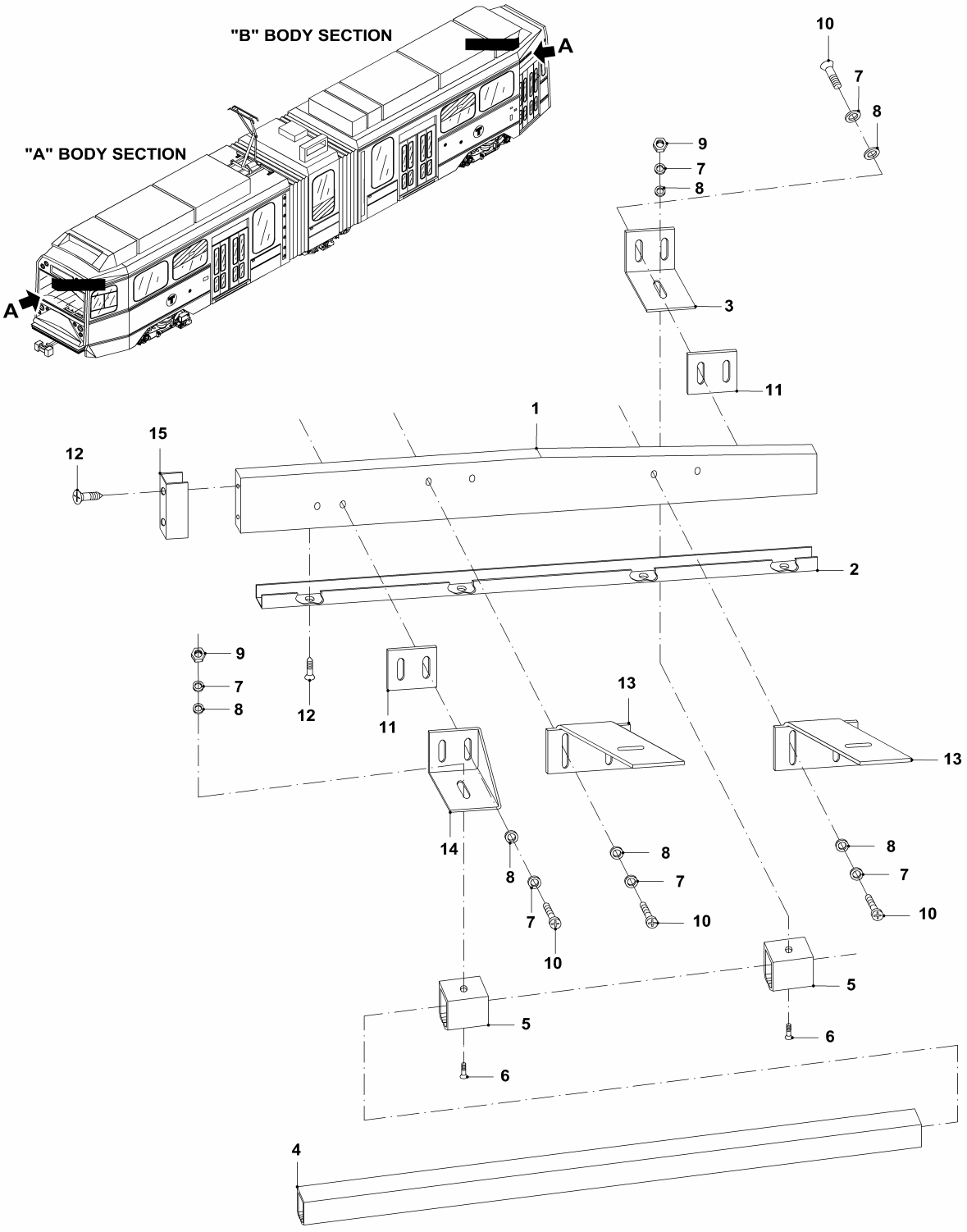


Figure 2-30 Higher Panel Assy, Dividing Wall

Higher Panel Assy, Dividing Wall (Fig. 2-30)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-030-	R12920900	R12920900	A0185	HIGHER PANEL ASSY, DIVIDING WALL - SEE FIG. 2-29 FOR NHA		EA	1
1	R12920740	R12920740	A0185	.HIGHER PANEL		EA	1
2	R12920743	R12920743	A0185	.HORIZONTAL FRAME		EA	1
3	R12920786	R12920786	A0185	.BRACKET		EA	1
4	R12920745	25769	B0074	.DOOR TRACK, UPPER		EA	1
5	R1292091617	24093	B0074	.SUPPORT, UPPER DOOR TRACK		EA	2
6	R129209166	1/4-20 UNCx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD -1/4-20 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	2
7	R129209164	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	10
8	R129209163	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	10
9	R1292091616	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	2
10	R129209162	1/4-20 UNCx3/4 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT 1/4-20 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	8
11	R12920785	R12920785	A0185	.GASKET-0.39x0.12		FT	0.26
12	R129209161	NO 8x3/4 ANSI B18.6.1aS	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x3/4 ANSI B18.6.1 - SSTL AISI 304A		EA	6
13	R12920737	R12920737	A0185	.BRACKET		EA	2
14	R12920787	R12920787	A0185	.BRACKET		EA	1
15	R12920782	R12920782	A0185	.PROFILE		EA	1

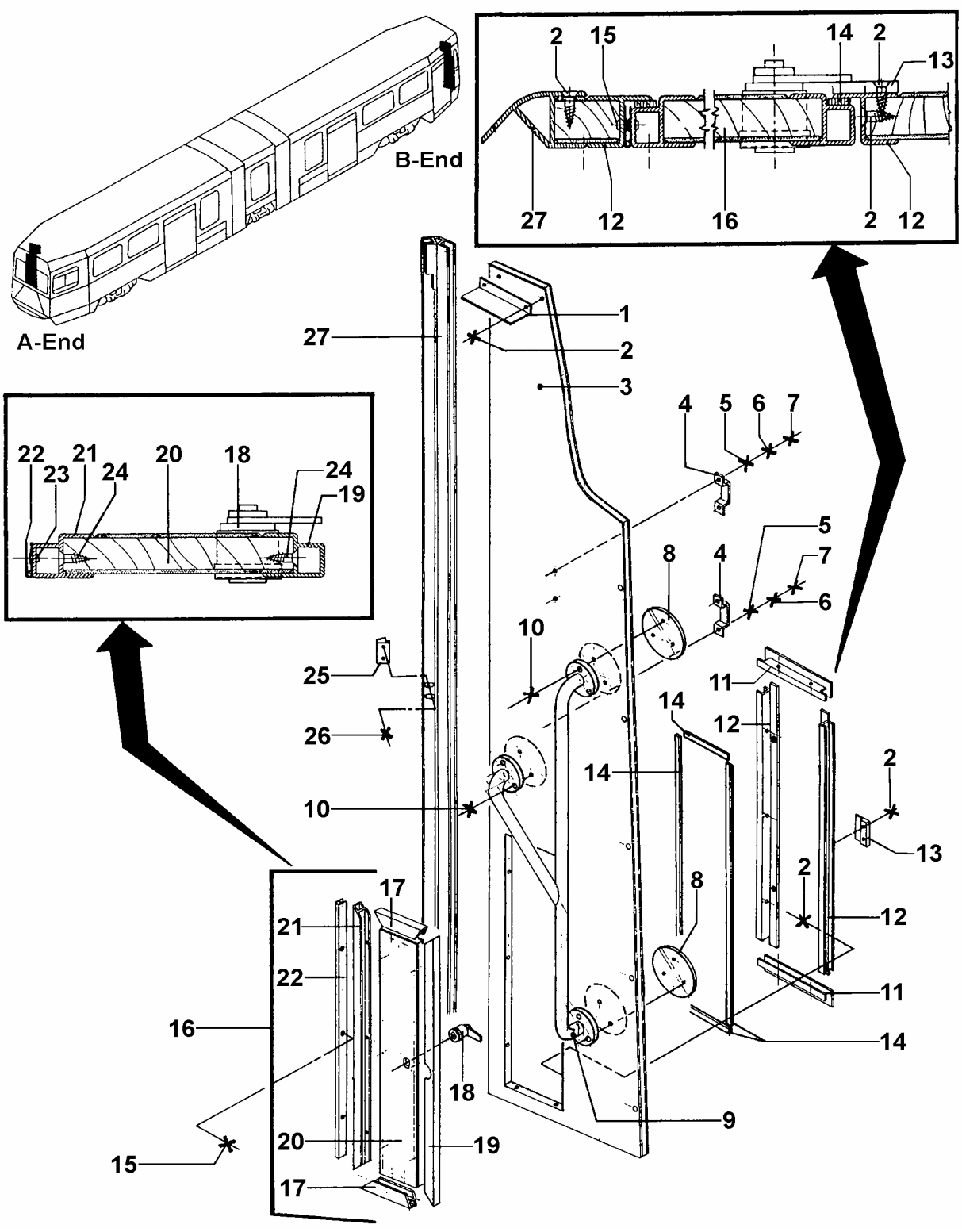
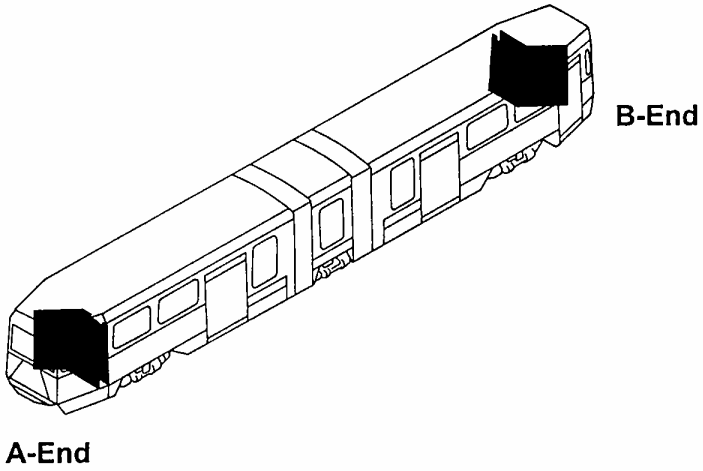


Figure 2-31 Panel, Lateral

Panel, Lateral (Fig. 2-31)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-031-	R12920901	R12920901	A0185	PANEL, LATERAL - SEE FIG. 2-29 FOR NHA		EA	1
1	R12920753	R12920753	A0185	.SUPPORT, CEILING		EA	1
2	R129209011	NO 8x3/4 ANSI B18.6.1aS	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x3/4 ANSI B18.6.1 - SSTL AISI 304A		EA	21
3	R12920741	R12920741	A0185	.PANEL, LATERAL		EA	1
4	R12920783	R12920783	A0185	.BRACKET		EA	2
5	R1292090114	16x25 mm UNI 6364	Z9009	.WASHER, PLAIN TYPE B - - ATT.PT 16x25 mm UNI 6364		EA	4
6	R1292090115	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
7	R1292090113	NO 8-32 UNCx3/4 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - NO 8-32 UNCx3/4 ANSI B18.3 - SSTL AISI 304		EA	6
8	R12920755	R12920755	A0185	.SUPPORT, HANDRAIL		EA	3
9	R12990239	R12990239	A0185	HANDRAIL - SEE FIG. 2-88 FOR NHA		EA	1
10	R129209019	1/4-20 UNCx1 ANSI B18.3bS	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD -1/4-20 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	9
11	R12920775	R12920775	A0185	.FRAME		EA	2
12	R12920776	R12920776	A0185	.FRAME		EA	2
13	R12920732	R12920732	A0185	.BRACKET		EA	1
14	R12920785	R12920785	A0185	.GASKET-0.39x0.12		FT	4.92
15	R129209018	TAP.D 36 BS	Z9009	.RIVET, BLIND, POP - TAP.D 36 - ATT.PT BS - Al Mg 2		EA	11
16	R12920902	R12920902	A0185	.DOOR		EA	1
17	R12920778	R12920778	A0185	..FRAME		EA	2
18	R12312682	R12312682	A0185	..LOCK, TYPE B		EA	1
19	R12920780	R12920780	A0185	..FRAME		EA	1
20	R12920781	R12920781	A0185	..WICKET		EA	1
21	R12920779	R12920779	A0185	..FRAME		EA	1
22	R12920981	R12920981	A0185	..HINGE - LG=24.21		EA	1
23	R129209028	TAP.D 36 BS	Z9009	..RIVET, BLIND, POP - TAP.D 36 - ATT.PT BS - Al Mg 2		EA	11
24	R129209021	NO 8x1 ANSI B18.6.1aS	Z9009	..SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	10
25	R12922997	R12922997	A0185	.STRIKER - SEE FIG. 2-38 FOR NHA		EA	1
26	R1292090116	M4x8 mm UNI 7688	Z9009	.SCREW, F.C.H. - M4 x 8 mm - ATT.PT UNI 7688 - SSTL AISI 304		EA	2
27	R12920742	R12920742	A0185	.FRAME, VERTICAL		EA	1



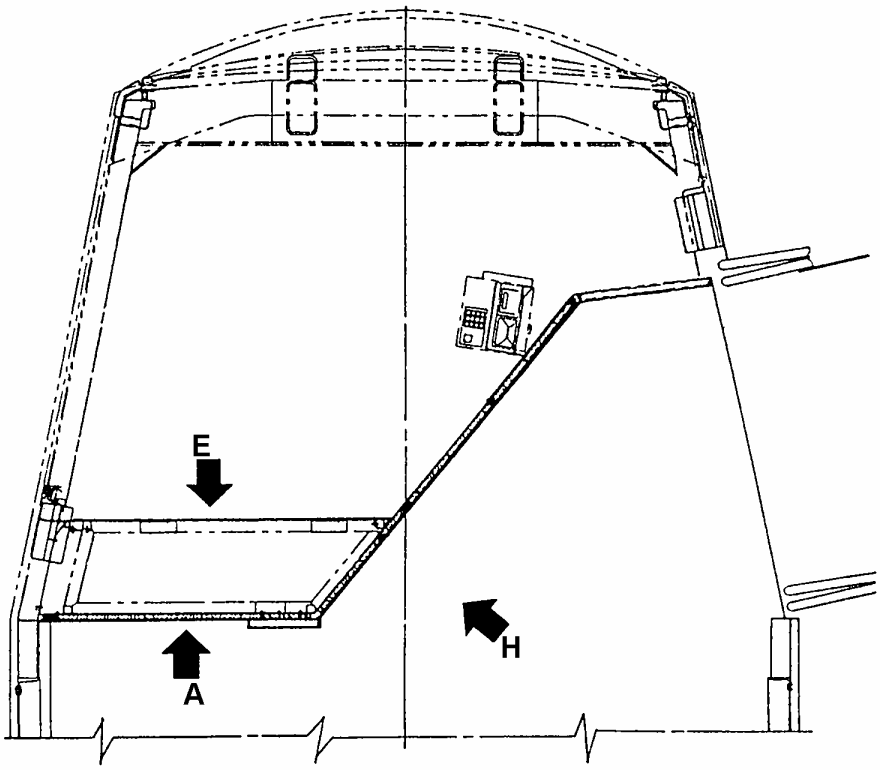


Figure 2-32 Cab Control Cubicle Assy (Sheet 1 of 4)

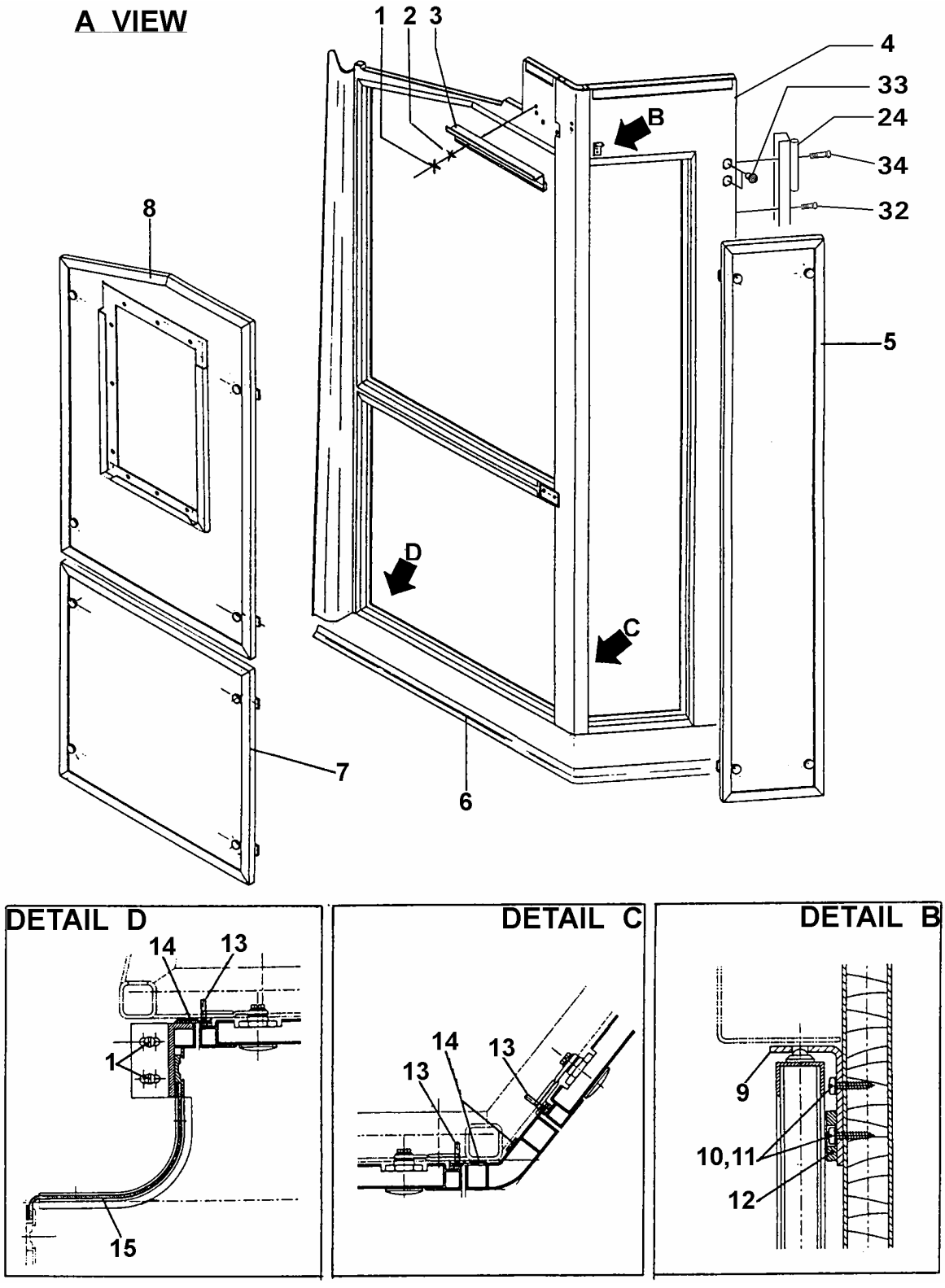


Figure 2-32 Cab Control Cubicle Assy (Sheet 2 of 4)

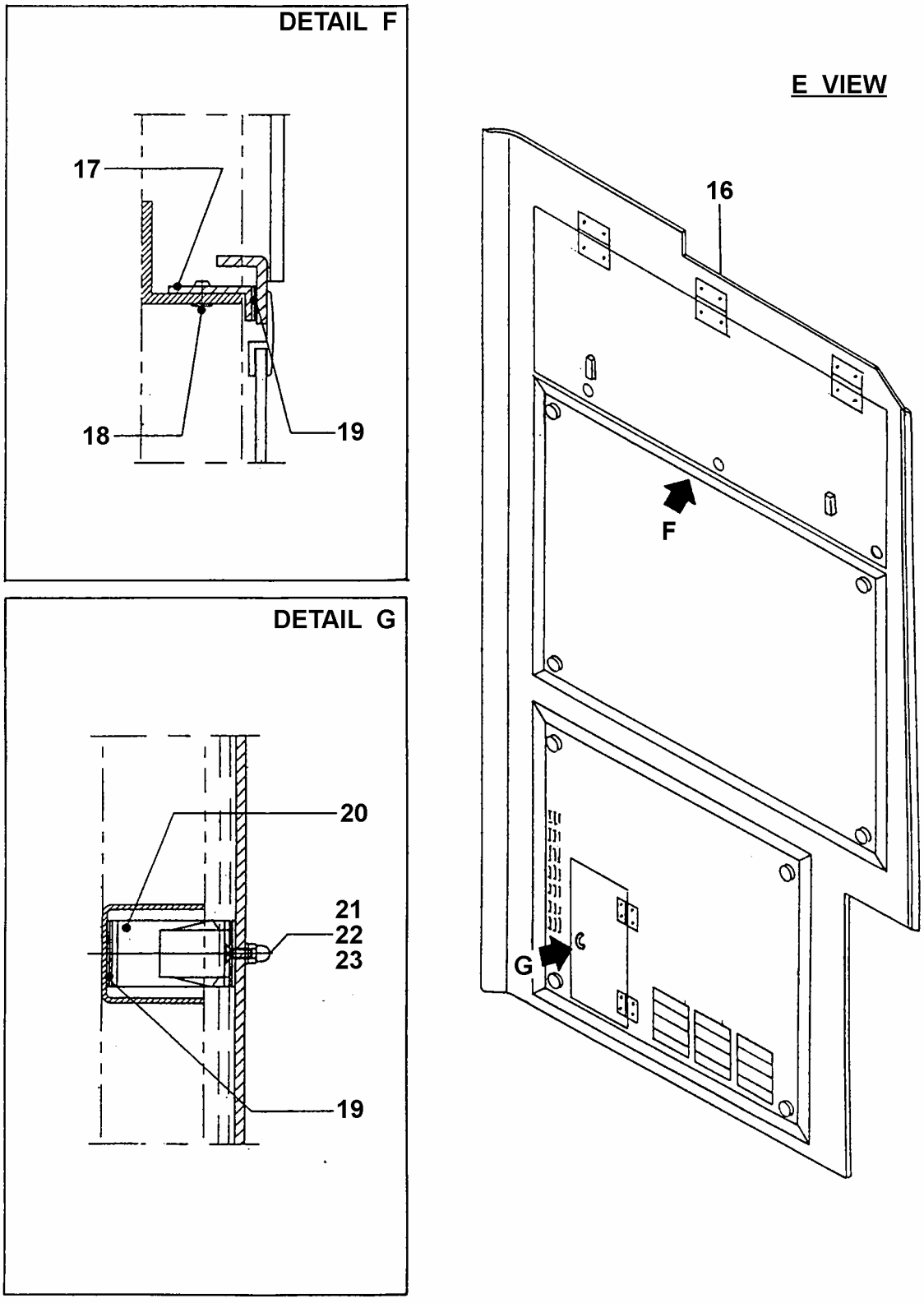


Figure 2-32 Cab Control Cubicle Assy (Sheet 3 of 4)

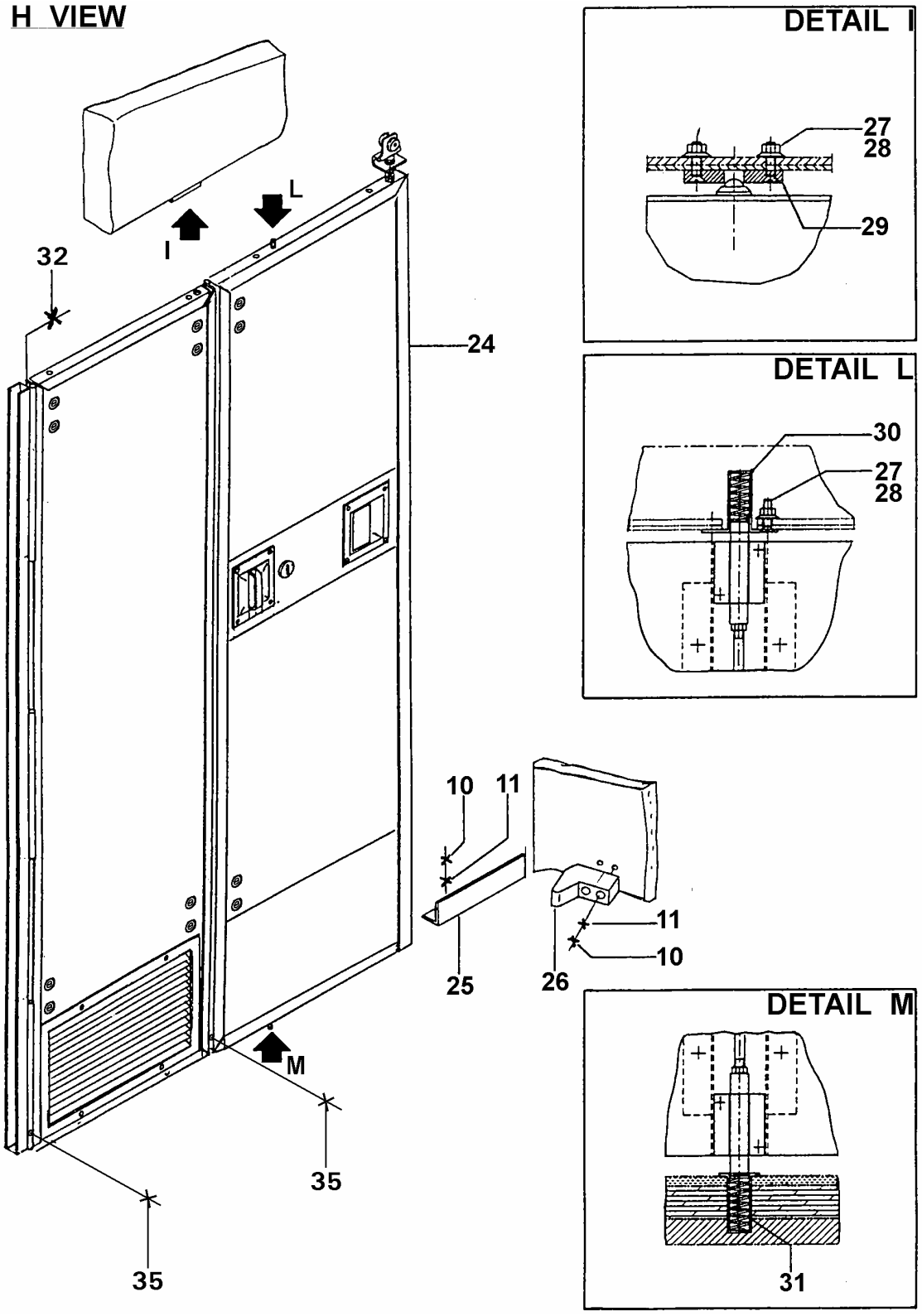


Figure 2-32 Cab Control Cubicle Assy (Sheet 4 of 4)

NOTE: ITEMS 24, 27, 28, 30 THRU 35 MODIFIED AS PER CFG 1074

Cab Control Cubicle Assy (Fig. 2-32)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-032-	R12922600	R12922600	A0185	CAB CONTROL CUBICLE ASSY		EA	1
1	R129226002	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	10
2	R1292260011	R1292260011	A0185	.SCREW COVER		FT	13.0
3	R12922604	R12922604	A0185	.BUTT STRAP		EA	2
4	R12922620	R12922620	A0185	.WALL STRUCTURE		EA	2
5	R12922623	R12922623	A0185	.DOOR ASSY - SEE FIG. 2-36 FOR DETAIL		EA	2
6	R129226008	R129226008	A0185	.GASKET		FT	7.0
7	R12922622	R12922622	A0185	.DOOR ASSY - SEE FIG. 2-35 FOR DETAIL		EA	2
8	R12922621	R12922621	A0185	.DOOR ASSY - SEE FIG. 2-34 FOR DETAIL		EA	2
9	R12922917	R12922917	A0185	.SHEET		EA	2
10	R129226005	NO 8x3/4 ANSI B18.6.1bS	Z9009	.SCREW, WOOD, PAN HD - NO 8x3/4 ANSI B18.6.1 - SSTL AISI 304A - ATT.PT		EA	8
11	R129226006	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 B ANSI B27.2 - SSTL AISI 304 - ATT.PT		EA	8
12	R1292260014	R1292260014	A0185	.STOPPER		EA	2
13	R129226001	NO 8-32 UNCx3/4 ANSI B18.6.3aN	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3-STLZNP		EA	50
14	R1292260015	R1292260015	A0185	.GASKET		FT	3.0
15	R12922903	R12922903	A0185	.PANEL		EA	2
16	R12922602	R12922602	A0185	.CAB CUBICLE SIDE WALL - SEE FIG. 2-33 FOR DETAIL		EA	2
17	R12922990	R12922990	A0185	.PROFILE		EA	2
18	R1292260021	TAP.D 44 BS	Z9009	.RIVET, R.P.H. POP - TAP.D 44 BS DO - ATT.PT		EA	6
19	R129226009	SJ 3550	78572	.DUAL-LOCK		FT	10.5
20	R12922991	R12922991	A0185	.STRIKER		EA	2
21	R1292260018	M3x8 mm UNI 7688	Z9009	.SCREW, F.C.H. - M3x8 mm UNI 7688 - STL ZNP - ATT.PT		EA	2
22	R1292260019	3.2x7 mm UNI 6592	Z9009	.WASHER, PLAIN - 3.2x7 mm UNI 6592-AISI 304 - ATT.PT		EA	2
23	R1292260020	M3 mm UNI 5721	Z9009	.NUT, HEX - M3 mm UNI 5721 - AISI 304A - ATT.PT		EA	2
24	R12922603	R12922603	A0185	.CAB DOOR ASSY - SEE FIG. 2-38 FOR DETAIL		EA	2
25	R12922605	R12922605	A0185	.DOOR WALL THERESHOLD		EA	2
26	R12922916	R12922916	A0185	.PROTECTION		EA	2
27	R129226003	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	12
28	R129226004	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 UNC ANSI B18.2.2 - SSTL AISI 304A - ATT.PT		EA	12
29	R12922914	R12922914	A0185	.PLATE		EA	2
30	R1292260012	R1292260012	A0185	.CUP		EA	4
31	R1292260013	R1292260013	A0185	.CUP		EA	4
32	R1292260022	NO 8-32 UNCx1-1/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1-1/4 ANSI B18.6.3 - SSTL AISI 304A		EA	10
33	R1292260321	R1292260321	A0185	.ROD		EA	4
34	R1292260024	1/4UNCx1-1/2	Z9009	.SCREW -1/4 UNCx1-1/2 - ATT.PT		EA	4
35	R1292260023	2x10 mm UNI 28752	Z9009	.PIN, SPRING - 2x10 mm UNI 28752		EA	2

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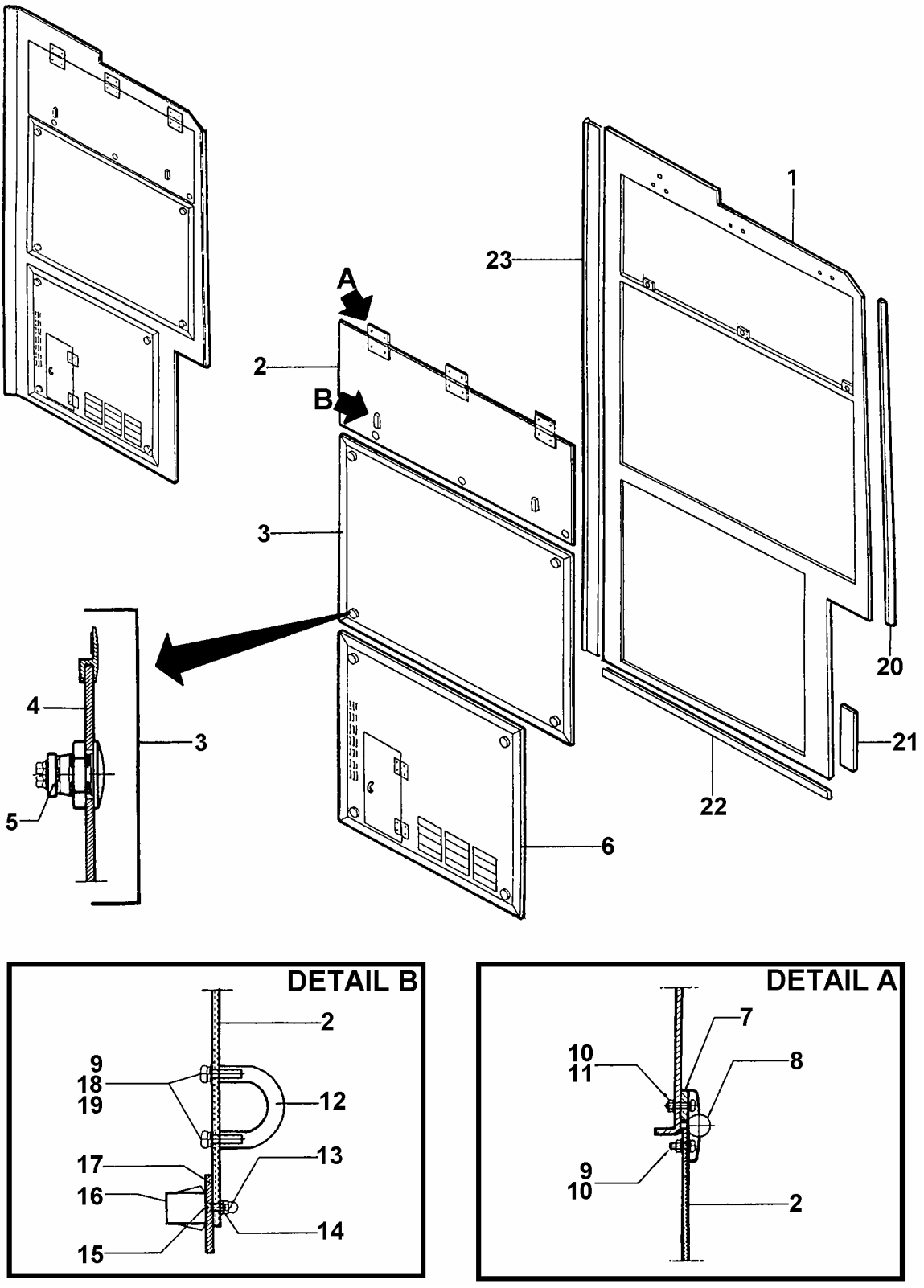

Figure 2-33 Cab Cubicle Side Wall

Cab Cubicle Side Wall (Fig. 2-33)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-033-	R12922602	R12922602	A0185	CAB CUBICLE SIDE WALL - SEE FIG. 2-32 FOR NHA		EA	1
1	R12922630	R12922630	A0185	.WALL		EA	1
2	R12922682	R12922682	A0185	.DOOR, UPPER		EA	1
3	R12922631	R12922631	A0185	.PANEL ASSY		EA	1
4	R12922681	R12922681	A0185	..PANEL		EA	1
5	R129226311	E5-1-011-040	B0005	..LOCK		EA	4
6	R12922632	R12922632	A0185	.DOOR ASSY - SEE FIG. 2-37 FOR DETAIL		EA	1
7	R12922977	R12922977	A0185	.RUBBER SHIM		EA	3
8	R129226021	G6-0-1-2	B0005	.HINGE		EA	3
9	R129226029	NO 8-32 UNCx1/2 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3-SSTLAISI304A		EA	10
10	R129226026	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	12
11	R129226022	NO 8-32 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	6
12	R129226025	B4-10-103-75	B0005	.HANDLE		EA	2
13	R1292260213	M3 mm UNI 5721	Z9009	.NUT, HEX - M3 mm UNI 5721 - AISI 304A		EA	3
14	R1292260212	3.2x7 mm UNI 6592	Z9009	.WASHER, PLAIN - 3.2x7 mm - ATT.PT UNI 6592-AISI 304		EA	3
15	R1292260211	M3x8 mm UNI 7688	Z9009	.SCREW, F.C.H. - M3x8 mm UNI - ATT.PT 7688 - STL ZNP		EA	3
16	R129226023	02-20-412-10	B0005	.LOCK		EA	3
17	R129226024	02-14-301-14	B0005	.STEEL PLATE		EA	3
18	R129226027	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
19	R129226028	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	4
20	R12922987	R12922987	A0185	.GASKET		IN	46.85
21	R12922988	R12922988	A0185	.GASKET		IN	34.64
22	R12922989	P3667	F8861	.GASKET		FT	6.5
23	R1292260210	SJ 3550	78572	.DUAL-LOCK		FT	9.8

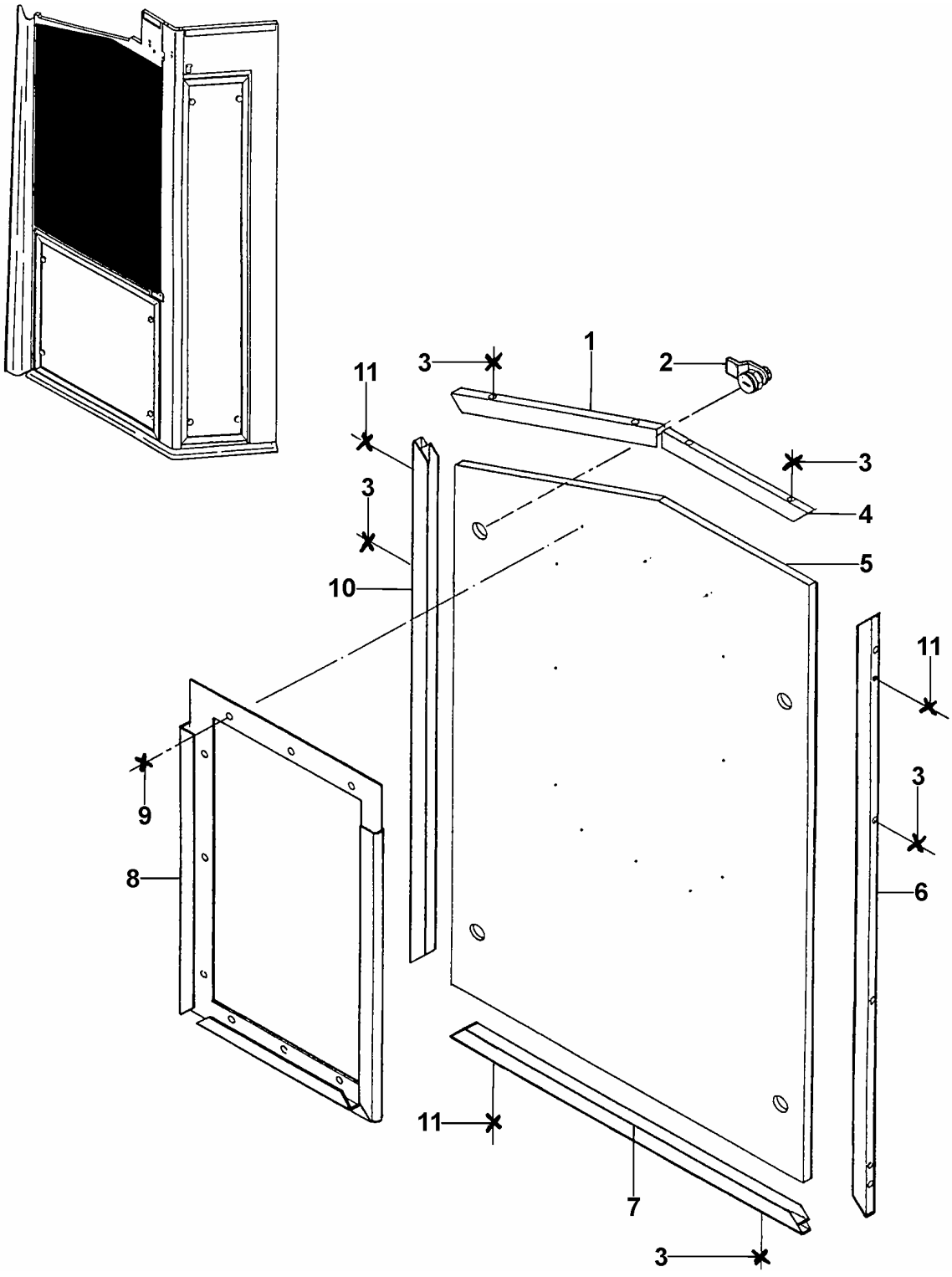

Figure 2-34 Door Assy

Door Assy (Fig. 2-34)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-034-	R12922621	R12922621	A0185	DOOR ASSY - SEE FIG. 2-32 FOR NHA		EA	1
1	R12922659	R12922659	A0185	.FRAME		EA	1
2	R129226211	E5-2-011-090	B0005	.LOCK		EA	4
3	R129226212	NO 8-32 UNCx1 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	15
4	R12922660	R12922660	A0185	.FRAME		EA	1
5	R12922658	R12922658	A0185	.PANEL		EA	1
6	R12922661	R12922661	A0185	.FRAME		EA	1
7	R12922662	R12922662	A0185	.FRAME		EA	1
8	R12922684	R12922684	A0185	.FRAME		EA	1
9	R1292260214	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	12
10	R12922663	R12922663	A0185	.FRAME		EA	1
11	R129226213	SJ 5008	78572	.PROTECTION, WHITE		EA	6

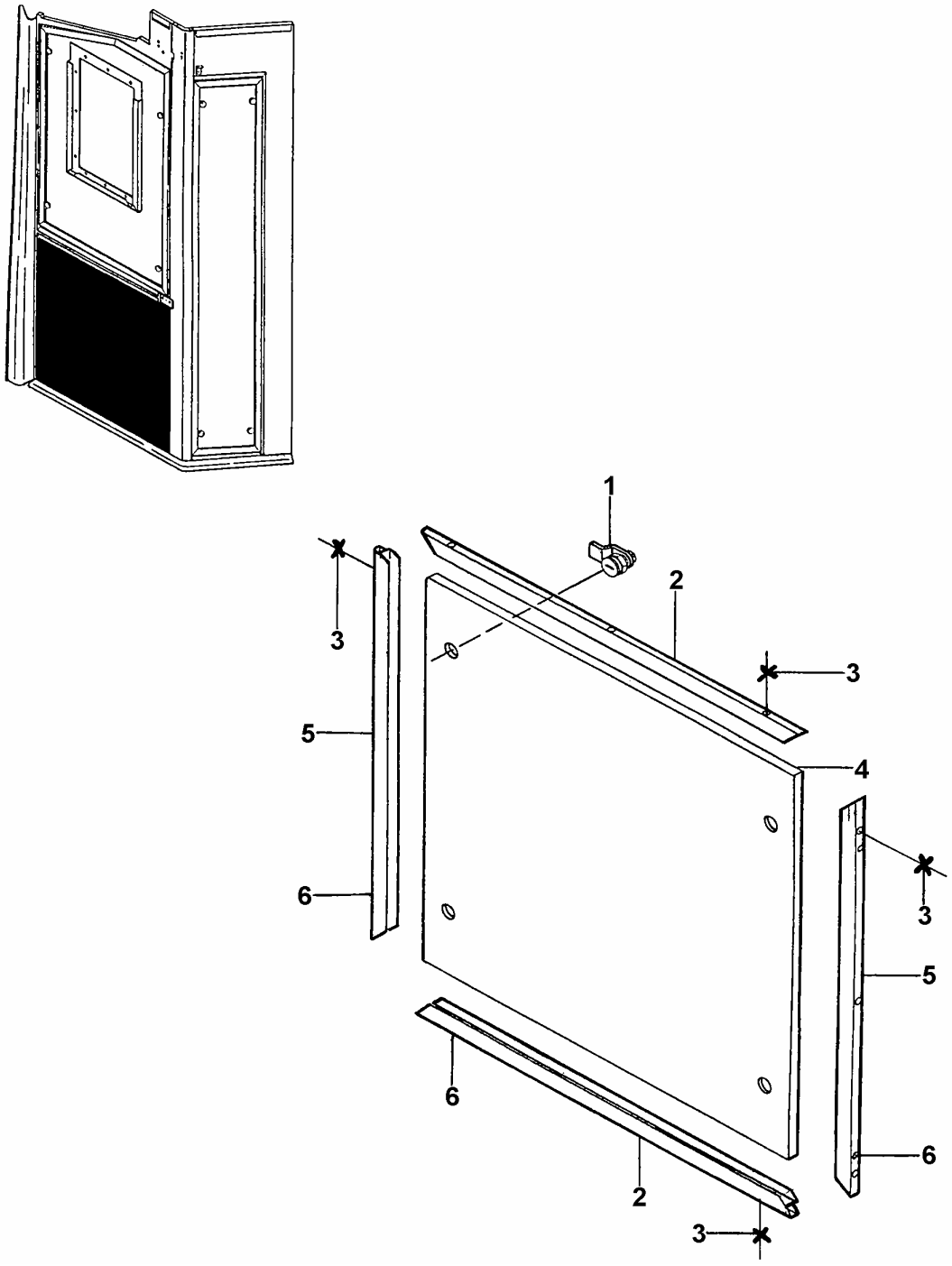

Figure 2-35 Door Assy

Door Assy (Fig. 2-35)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-035-	R12922622	R12922622	A0185	DOOR ASSY - SEE FIG. 2-32 FOR NHA		EA	1
1	R129226221	E5-2-011-090	B0005	.LOCK		EA	4
2	R12922669	R12922669	A0185	.FRAME		EA	2
3	R129226222	NO 8-32 UNCx1 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	12
4	R12922668	R12922668	A0185	.PANEL		EA	1
5	R12922670	R12922670	A0185	.FRAME		EA	2
6	R129226223	SJ 5008	78572	.PROTECTION, WHITE		EA	6

Figure 2-36 Door Assy

Door Assy (Fig. 2-36)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-036-	R12922623	R12922623	A0185	DOOR ASSY - SEE FIG. 2-32 FOR NHA		EA	1
1	R129226231	E5-2-011-090	B0005	.LOCK		EA	4
2	R12922678	R12922678	A0185	.FRAME		EA	2
3	R129226232	NO 8-32 UNCx1 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	17
4	R12922677	R12922677	A0185	.FRAME		EA	2
5	R12922675	R12922675	A0185	.PANEL		EA	1
6	R129226233	SJ 5008	78572	.PROTECTION, WHITE		EA	6

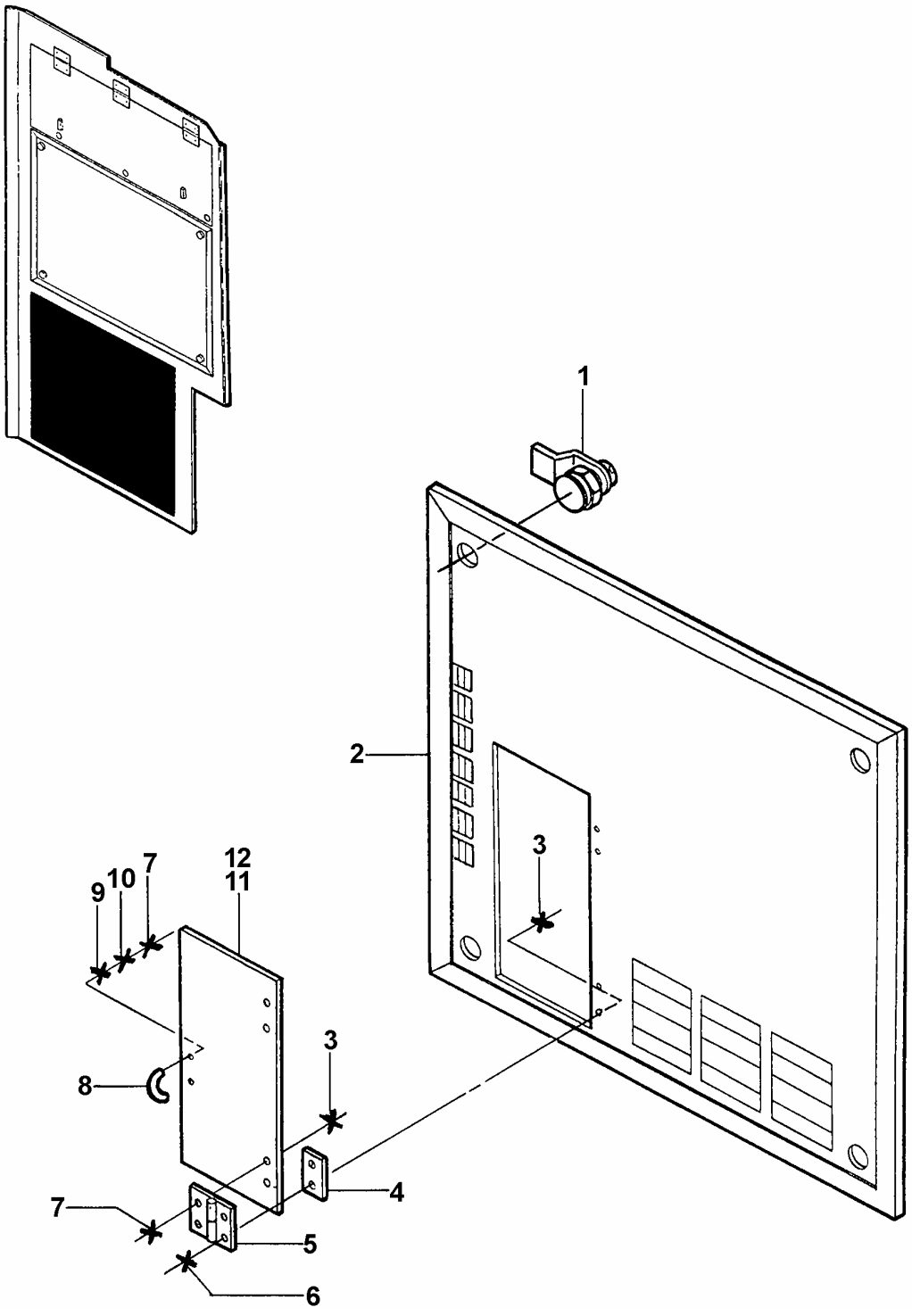

Figure 2-37 Door Assy

Door Assy (Fig. 2-37)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-037-	R12922632	R12922632	A0185	DOOR ASSY - SEE FIG. 2-33 FOR NHA		EA	1
1	R129226321	E5-1-011-040	B0005	.LOCK		EA	4
2	R12922691	R12922691	A0185	.PANEL		EA	1
3	R129226327	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
4	R12922977	R12922977	A0185	.RUBBER SHIM - NEOPRENE BLACK 70 SHORE		EA	2
5	R129226323	G6-0-1-2	B0005	.HINGE		EA	2
6	R129226324	NO 8-32 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	4
7	R129226322	NO 8-32 UNCx1/2 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	6
8	R129226326	B4-10-103-12	B0005	.HANDLE		EA	1
9	R129226329	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	2
10	R129226328	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
11	R12922692	R12922692	A0185	.PANEL, OPENING		EA	1
12	R12922693	R12922693	A0185	.GASKET - 0.78x0.039 LG=9.84		EA	1

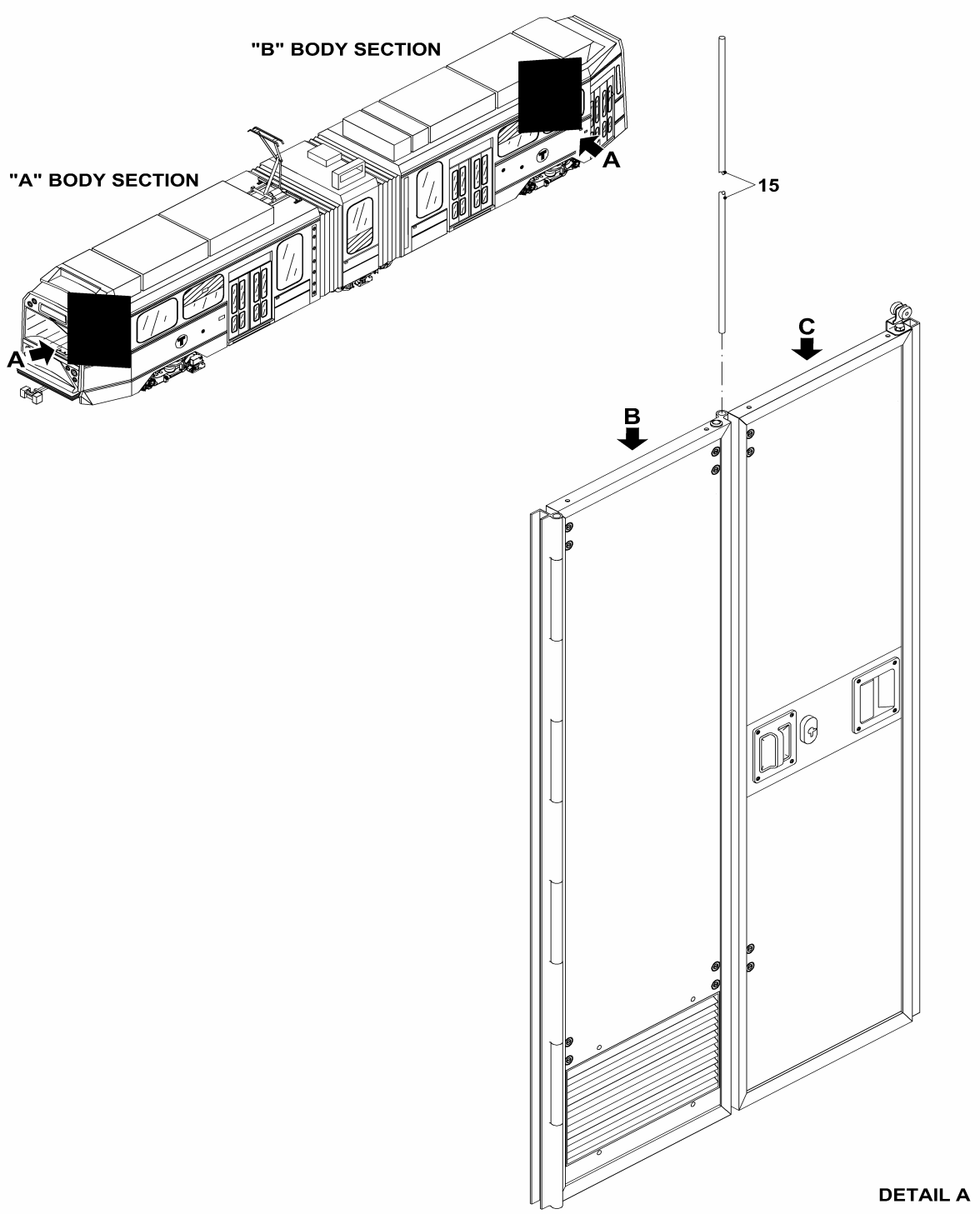

Figure 2-38 Cab Door Assy (Sheet 1 of 4)

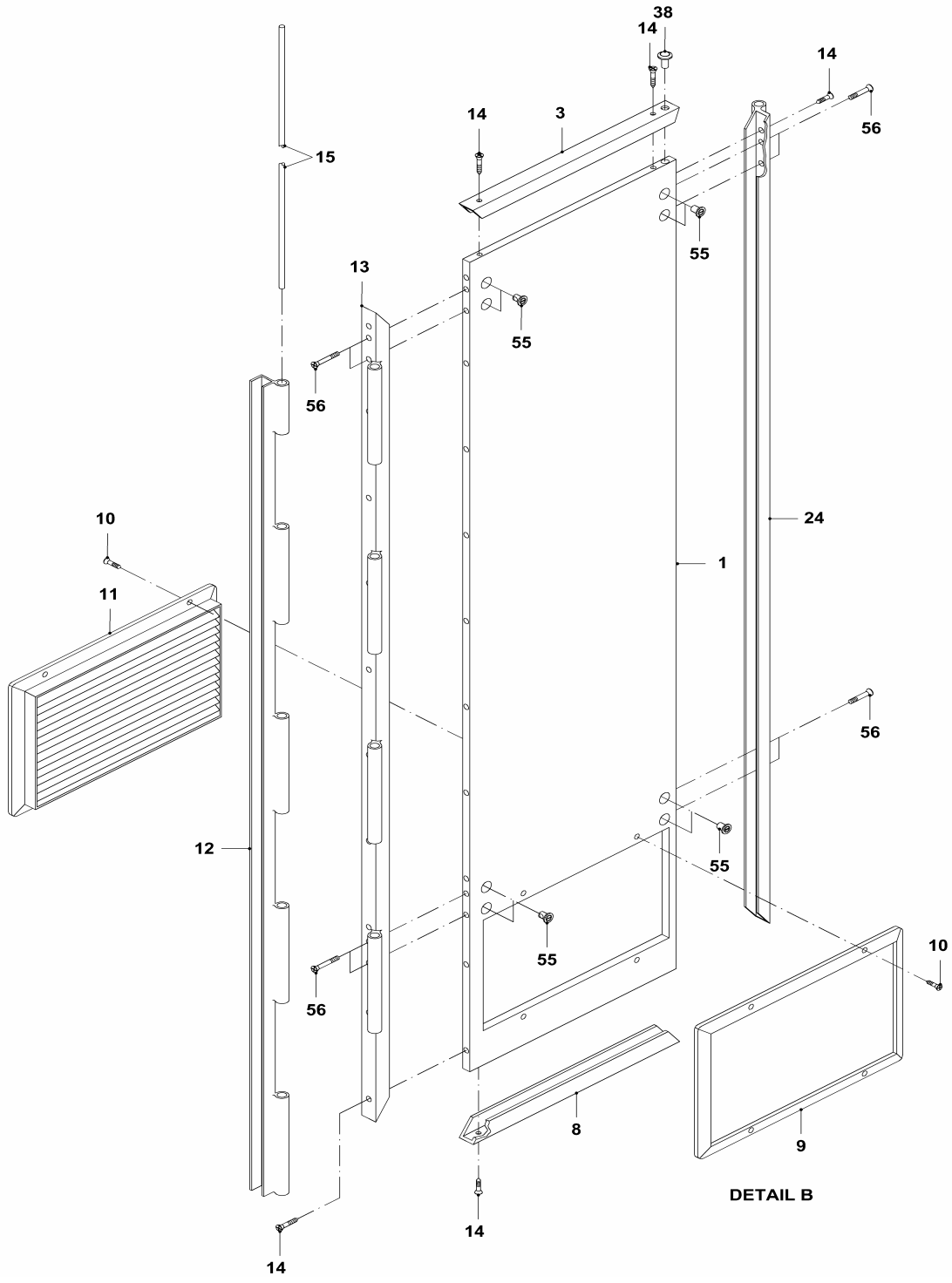

Figure 2-38 Cab Door Assy (Sheet 2 of 4)

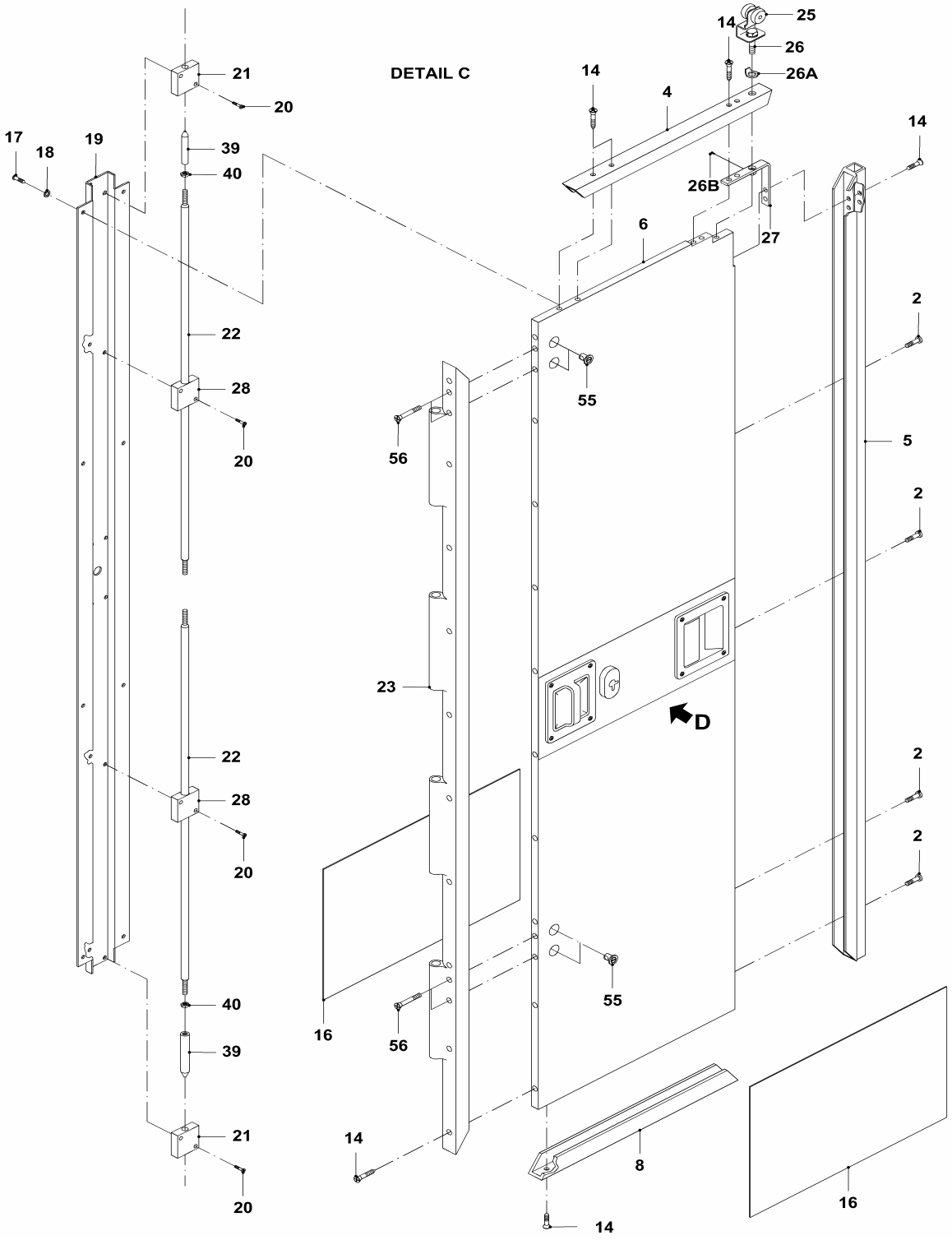

Figure 2-38 Cab Door Assy (Sheet 3 of 4)

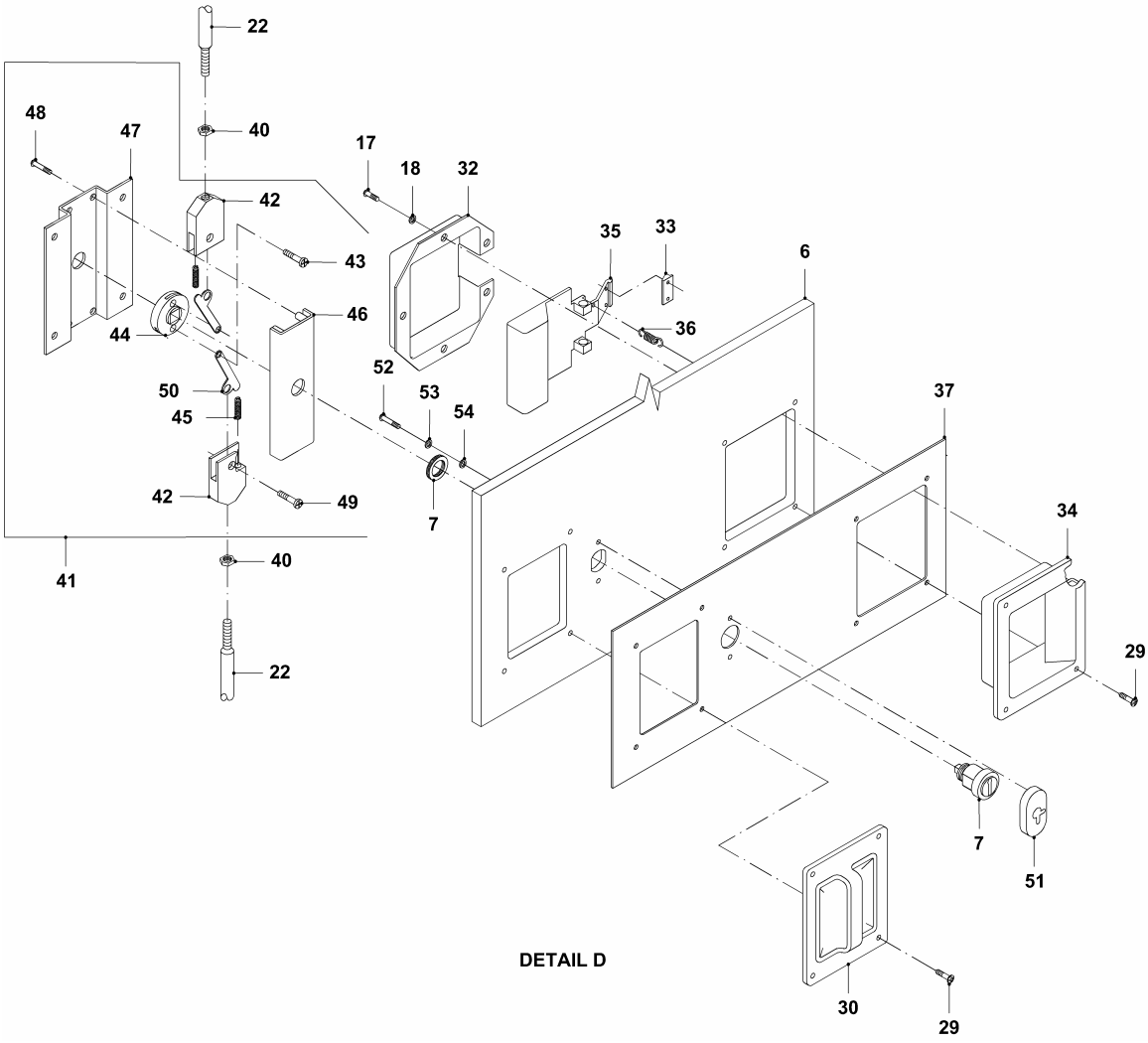

Figure 2-38 Cab Door Assy (Sheet 4 of 4)

Cab Door Assy (Fig. 2-38)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-038-	R12922603	R12922603	A0185	CAB DOOR ASSY - SEE FIG. 2-32 FOR NHA		EA	1
1	R12922640	R12922640	A0185	.PANEL		EA	1
2	R1292260314	M4.2x25 mm - CS	Z9009	.SCREW, CYL HD - M4.2 x 25 ATT.PT mm - SSTL AISI 304A		EA	4
3	R12922981	R12922981	A0185	.FRAME		EA	1
4	R12922979	R12922979	A0185	.FRAME		EA	1
5	R12922646	R12922646	A0185	.FRAME		EA	1
6	R12922644	R12922644	A0185	.PANEL		EA	1
7	R12922971	R12922971	A0185	.CYLINDER, WITH KEY		EA	1
8	R12922978	R12922978	A0185	.FRAME		EA	2
9	R12922651	R12922651	A0185	.SUPPORT, GRID		EA	1
10	R1292260313	M2.9x19 mm	Z9009	.SCREW, F.C.H.T. - M2.9x19 mm ATT.PT - AISI 304A		EA	8
11	R12922650	R12922650	A0185	.GRID		EA	1
12	R12922647	R12922647	A0185	.HINGE		EA	1
13	R12922642	R12922642	A0185	.HINGE		EA	1
14	R129226031	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	31
15	R12922985	R12922985	A0185	.PIN		EA	2
16	R12922913	R12922913	A0185	.SHEET		EA	2
17	R1292260310	M4.2x13mm-CS	Z9009	.SCREW, CYL HD - M4.2 x 13 ATT.PT mm - SSTL AISI 304A		EA	16
18	R129226032	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	16
19	R12922975	R12922975	A0185	.PROFILE		EA	1
20	R1292260311	M4.2x25 mm - W	Z9009	.SCREW, WOOD, F.C.H.-M4.2x ATT.PT 25 mm - SSTL AISI 304A		EA	8
21	R12922984	R12922984	A0185	.BLOCK		EA	2
22	R12922973	R12922973	A0185	.ROD		EA	2
23	R12922645	R12922645	A0185	.HINGE		EA	1
24	R12922643	R12922643	A0185	.HINGE		EA	1
25	R129226034	54045	B0074	.CARRIAGE		EA	1
26	R129226038	50998	B0074	.PIN, CARRIAGE		EA	1
26A	R1292260319	10 mm UNI 6600	Z9009	.WASHER, LOCK -10 UNI 6600		EA	1
26B	R1292260318	NO 8-UNCx3/16	Z9009	.NUT, HEX - NO 8-UNCx3/16		EA	1
27	R12922607	R12922607	A0185	.ANGULAR		EA	1
28	R12922983	R12922983	A0185	.BLOCK		EA	2
29	R1292260312	M3.9x16mm	Z9009	.SCREW, TAPPING, FLAT CTSK ATT.PT HD - M3.9x16 mm - AISI 304A		EA	8
30	R129226033	2742-A	34475	.PULL HANDLE		EA	1
31	R12922992	R12922992	A0185	.CLOSING HANDLE ASSY - (Includes Items 32 through 36)		EA	1
32	R12922995	R12922995	A0185	..INSIDE BOX		EA	1
33	R12922997	R12922997	A0185	..STRIKER - SEE FIG. 2-31 FOR INSTALLATION		EA	1
34	R12922994	R12922994	A0185	..OUTSIDE BOX		EA	1
35	R12922993	R12922993	A0185	..HANDLE		EA	1
36	R129229921	R129229921	A0185	..SPRING		EA	1
37	R12922976	R12922976	A0185	.SHEET		EA	1
38	R129226037	R129226037	A0185	.LOCK, SPRING		EA	1
39	R12922982	R12922982	A0185	.PIN		EA	2

Cab Door Assy (Fig. 2-38)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-038- 40	R129226039	M4 mm UNI 7473	Z9009	.NUT, LOCK - M4 mm UNI 7473 - - ATT.PT AISI 304A		EA	4
41	R12922972	R12922972	A0185	.LOCK ASSY		EA	1
42	R129229724	R129229724	A0185	..ATTACHMENT, ROD		EA	2
43	R129229725	R129229725	A0185	..PIN		EA	2
44	R129229723	R129229723	A0185	..BAR, SQUARE		EA	1
45	R129229722	R129229722	A0185	..SPRING		EA	2
46	R129229727	R129229727	A0185	..SEATING		EA	1
47	R129229728	R129229728	A0185	..LOCK		EA	1
48	R129229729	M3x8 UNI 7687	Z9009	..SCREW-M3x8 UNI 7687- -ATT.PT SSTL AISI 304		EA	4
49	R129229726	R129229726	A0185	..PIN		EA	2
50	R129229721	R129229721	A0185	..LEVER		EA	2
51	R12922996	R12922996	A0185	.COVER, LOCK		EA	1
52	R1292260315	NO 8-32 UNCx3/4 ANSI B18.6.3c1S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT CROSS REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	2
53	R1292260316	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
54	R1292260317	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	2
55	R1292260321	R1292260321	A0185	.ROD		EA	12
56	R1292260320	1/4-UNCx1-3/4	Z9009	.SCREW - 1/4-UNCx1-3/4		EA	12

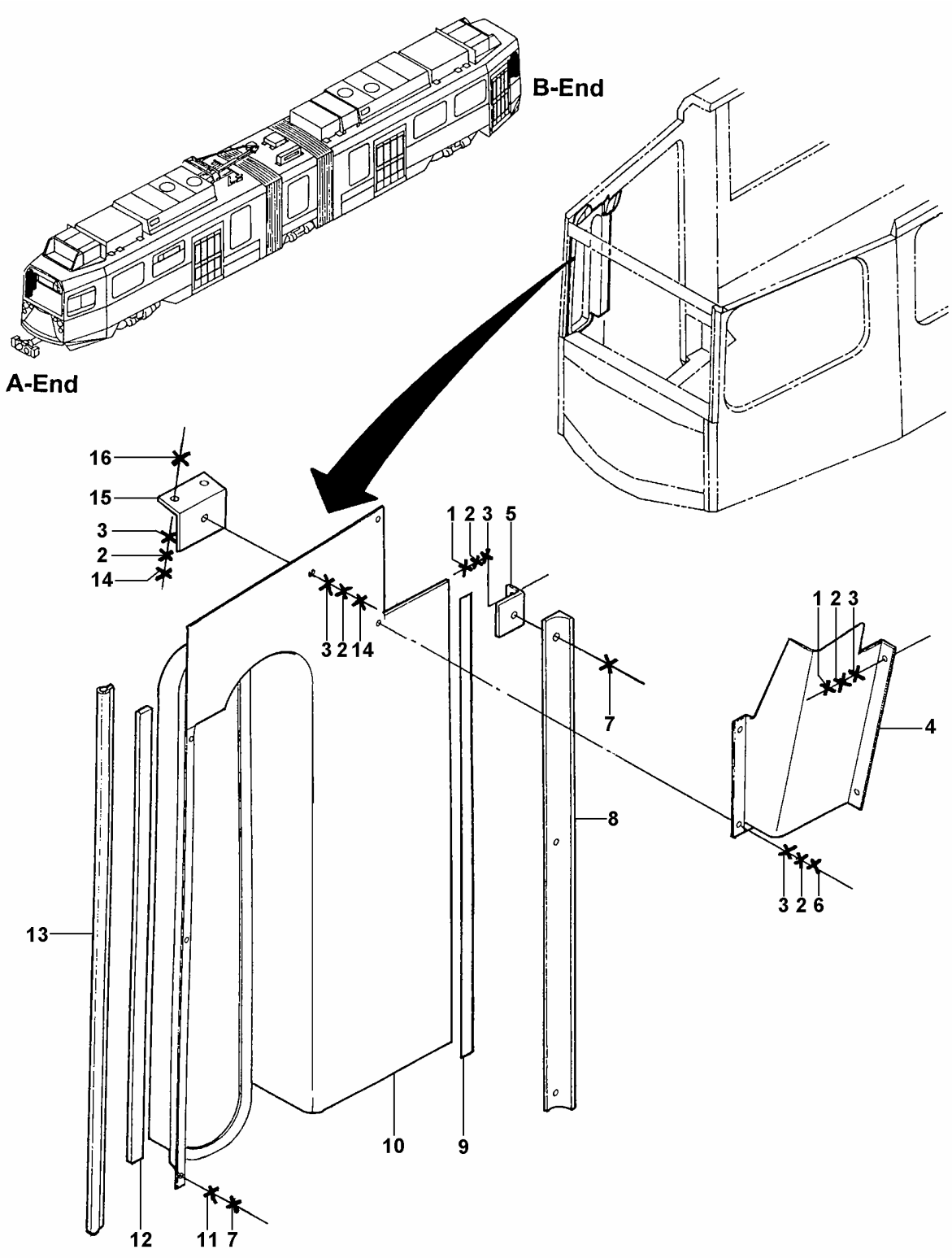

Figure 2-39 Cab Window Frame, Right, Installation

Cab Window Frame, Right, Installation (Fig. 2-39)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-039-	R12922820	R12922820	A0185	CAB WINDOW FRAME, RIGHT, INSTALLATION		EA	2
1	R129228243	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	8
2	R129228244	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	13
3	R129228245	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	13
4	R12920793	R12920793	A0185	.PANEL		EA	1
5	R12920791	R12920791	A0185	.ANGLE		EA	3
6	R129228246	NO 8-32 UNCx3/4 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	2
7	R129228241	NO 8-32 UNCx1 ANSI B18.6.4d4S	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4 - SSTL AISI 304A		EA	6
8	R12920790	R12920790	A0185	.FRAME		EA	1
9	R12922826	R12922826	A0185	.GASKET		FT	6.6
10	R12922821	R12922821	A0185	.FRAME, RIGHT		EA	1
11	R129228247	5 mm UNI 6594	Z9009	.WASHER-5 mm UNI 6594 - ATT.PT		EA	3
12	R12922825	R12922825	A0185	.GASKET		FT	3.28
13	R12922833	R12922833	A0185	.GASKET		FT	3.77
14	R129228242	NO 8-32 UNCx1 ANSI B18.6.4e3S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4- SSTL AISI 304		EA	3
15	R12922828	R12922828	A0185	.BRACKET		EA	1
16	R129228248	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	2

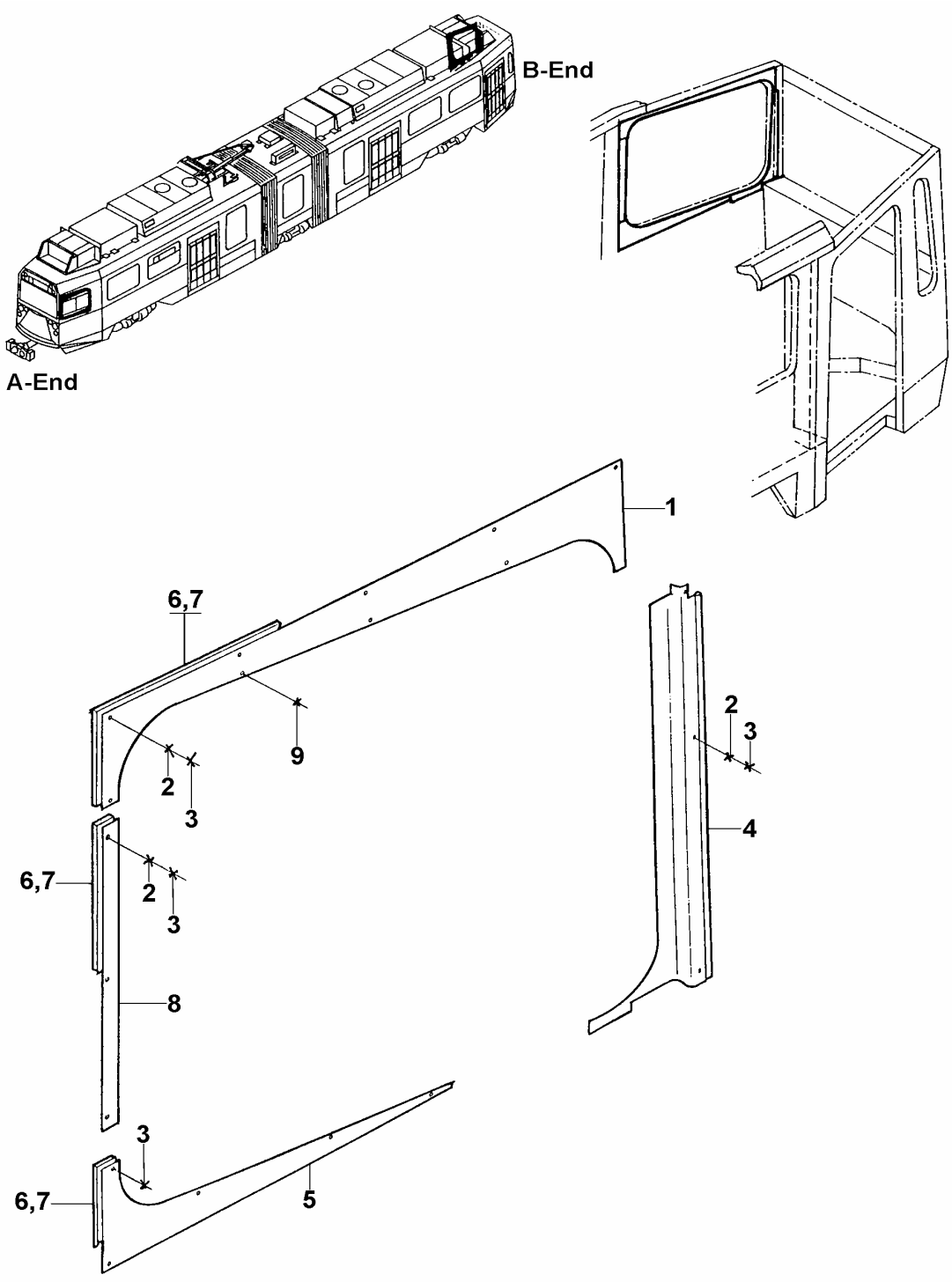

Figure 2-40 Cab Window Frame, Left, Installation

Cab Window Frame, Left, Installation (Fig. 2-40)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-040-	R12922830	R12922830	A0185	CAB WINDOW FRAME, LEFT, INSTALLATION		EA	2
1	R12922834	R12922834	A0185	.FRAME		EA	1
2	R129228293	5 mm UNI 6594	Z9009	.WASHER-5 mm UNI 6594 - ATT.PT		EA	20
3	R129228291	NO 8-32 UNCx1 ANSI B18.6.4d4S	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4-SSTLAISI304A		EA	24
4	R12922836	R12922836	A0185	.FRAME		EA	1
5	R12922835	R12922835	A0185	.FRAME		EA	1
6	R12922843	R12922843	A0185	.GASKET		FT	9.85
7	R12922844	R12922844	A0185	.GASKET		FT	6.6
8	R12922679	R12922679	A0185	.FRAME		EA	1
9	R129228302	NO 8-32 UNCx1 ANSI B18.6.4e3S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4-SSTLAISI304		EA	6

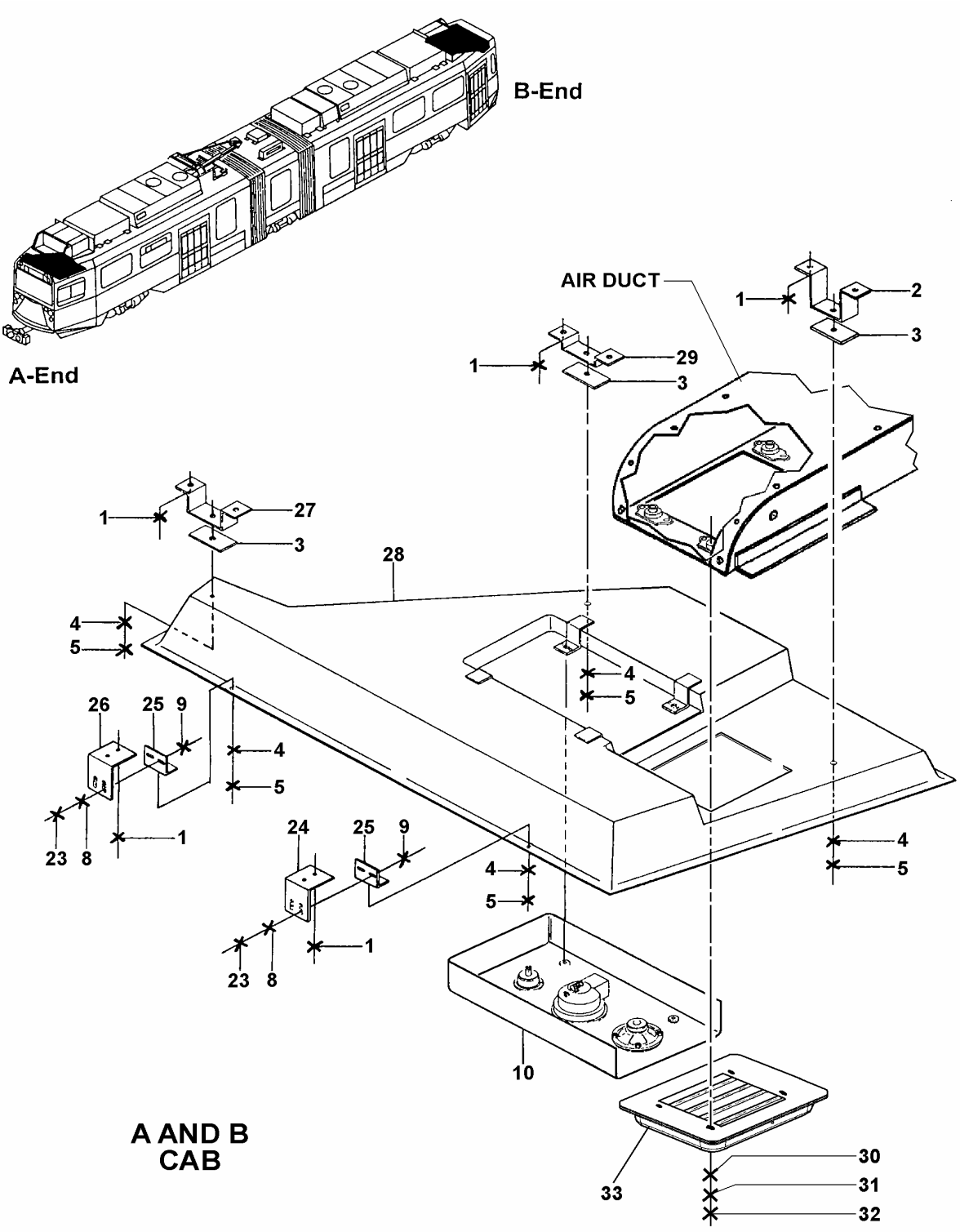

Figure 2-41 Cab Ceiling Installation (Sheet 1 of 3)

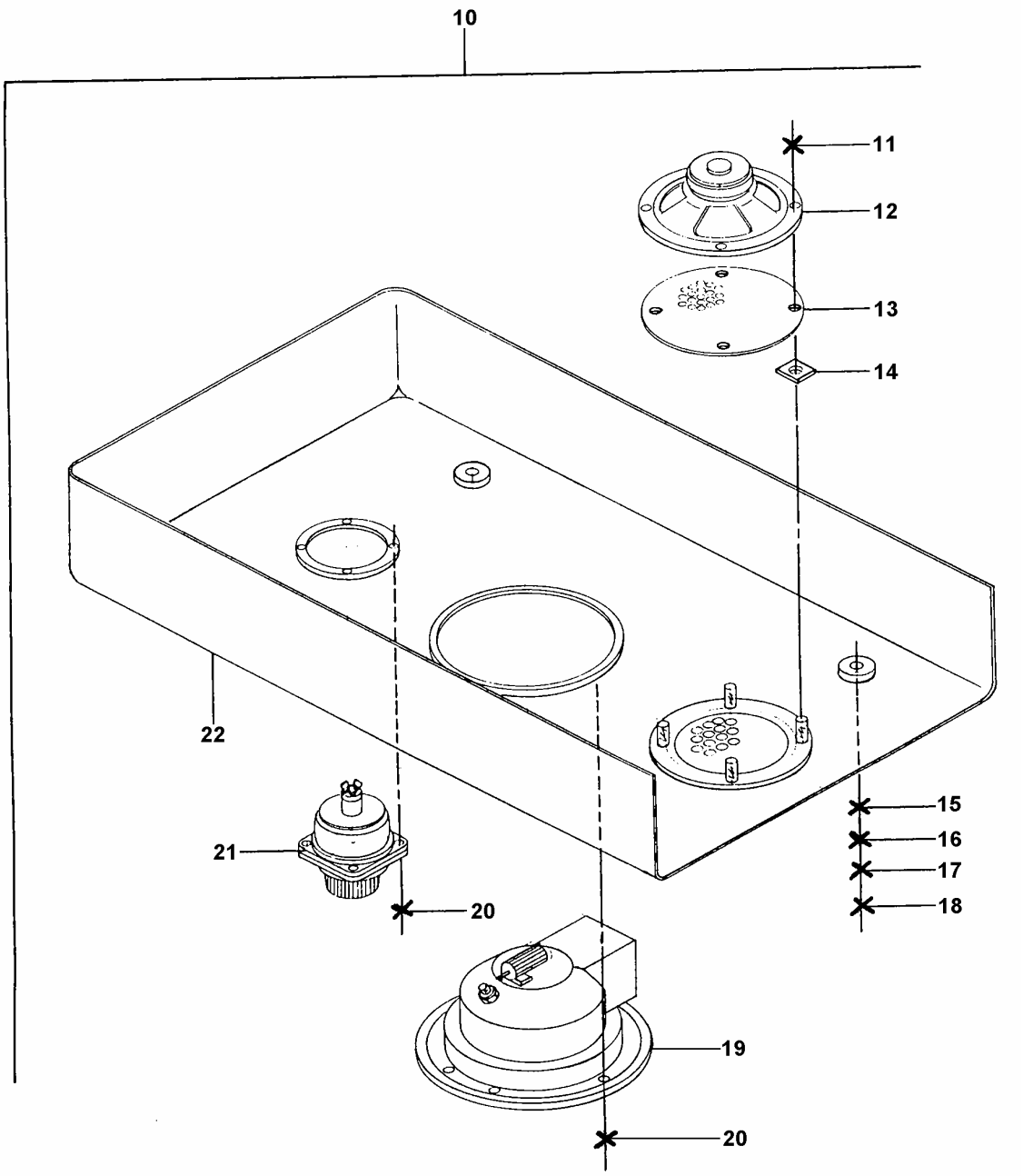

Figure 2-41 Cab Ceiling Installation (Sheet 2 of 3)

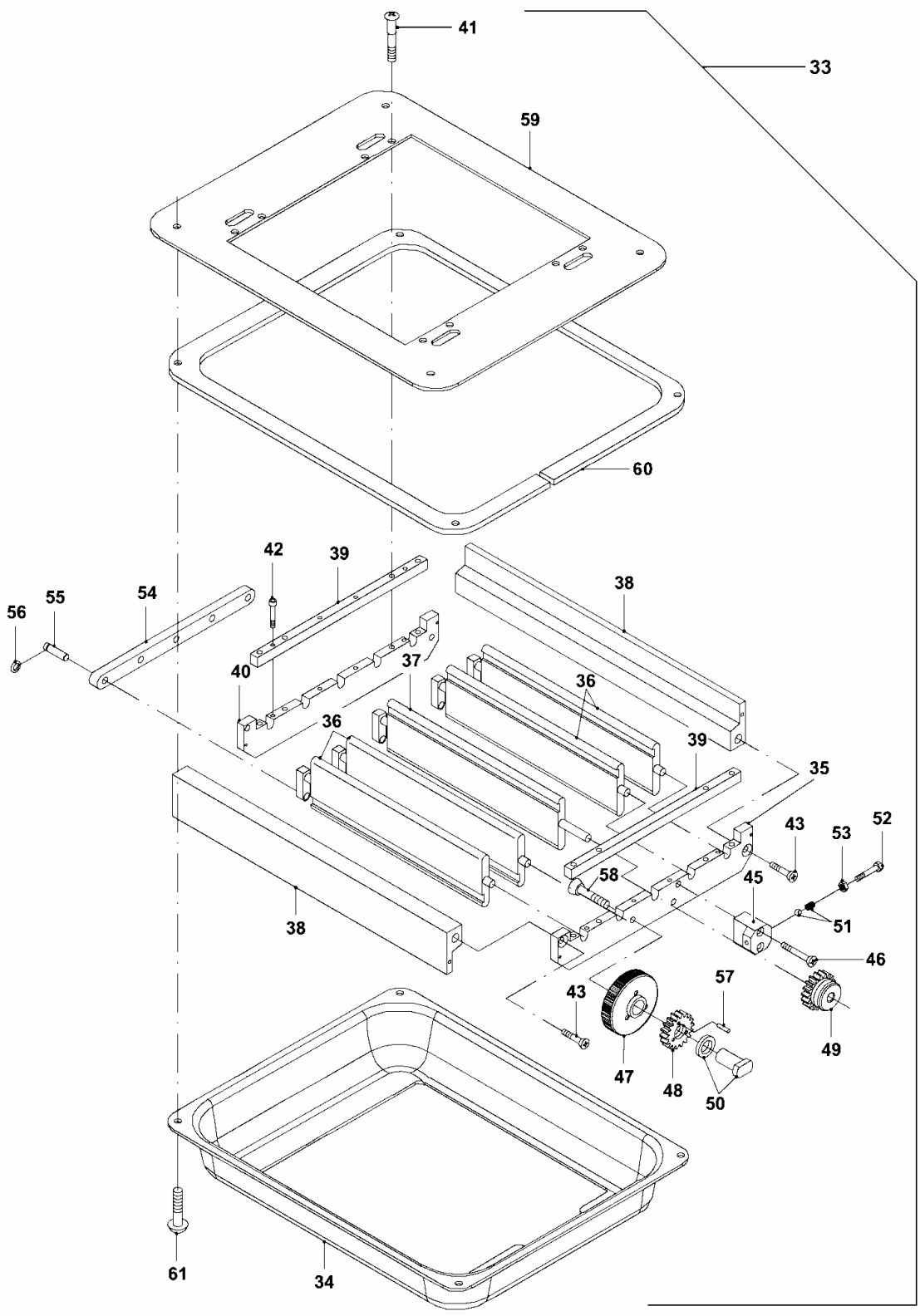

Figure 2-41 Cab Ceiling Installation (Sheet 3 of 3)

Cab Ceiling Installation (Fig. 2-41)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-041-	R12922800	R12922800	A0185	CAB CEILING INSTALLATION		EA	2
1	R129228008	TAP.D SS 54 BS	F1525	.RIVET, POP - TAP.D SS 54 BS - ATT.PT SSTL AISI 305		EA	10
2	R12922812	R12922812	A0185	.BRACKET		EA	1
3	R12922848	R12922848	A0185	.GASKET		FT	6.6
4	R1292280010	M5 mm UNI 6594	Z9009	.WASHER-5 mm UNI 6594 - ATT.PT		EA	5
5	R129228005	NO 8-32 UNCx1 ANSI B18.6.4d4S	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4- SSTL AISI 304A		EA	5
6				DELETED			
7	R1292280013	242	E0112	.ADHESIVE, THREAD LOCKING - (LCTC, CAT. NO. 242)			AR
8	R129228009	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	4
9	R129228006	NO 8-32 UNCx1 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.3- SSTL AISI 304A		EA	4
10	R12922802	R12922802	A0185	.PANEL LIGHTS		EA	1
11	R129228022	NO 10-24 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 10-24 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
12	R12466107	N840-5310-001	B0023	..SPEAKER, INTERNAL (A14) - SEE FIG. 12-1 FORNHA		EA	1
13	R12961100	R12961100	A0185	..PUNCHED PLATE		EA	1
14	R12922817	R12922817	A0185	..GASKET		FT	0.20
15	R129228023	85-78-300-20	B0005	..PIVOT		EA	4
16	R129228024	85-46-103-39	B0005	..WASHER		EA	4
17	R129228026	14-18-150-24	B0005	..SPRING		EA	4
18	R129228027	85-34-301-12	B0005	..RETAINER		EA	4
19	R12495815	109272003	B0006	..DOME LIGHT - SEE FIG. 6-1 FOR NHA - 6-13 FOR DETAIL		EA	1
20	R129228025	NO 8-32 UNCx3/4 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	9
21	R12495810	103233003	B0006	..FARE BOX LIGHT - SEE FIG. 6-1 FOR NHA-6-12 FOR DETAIL		EA	1
22	R12922842	R12922842	A0185	..FIBERGLASS		EA	1
23	R129228007	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
24	R12922873	R12922873	A0185	.BRACKET		EA	1
25	R12922806	R12922806	A0185	.BRACKET		EA	2
26	R12922872	R12922872	A0185	.BRACKET		EA	1
27	R12922810	R12922810	A0185	.BRACKET		EA	1
28	R12922801	R12922801	A0185	.CAB CEILING		EA	1
29	R12922808	R12922808	A0185	.BRACKET		EA	1
30	R1292280014	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	4
31	R1292280015	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
32	R1292280012	1/4-20 UNCx1-1/2 ANSI B18.6.3c1S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT CROSS REC -1/4-20 UNCx1-1/2 ANSI B18.6.3- SSTL AISI 304		EA	4
33	R12922849	R12922849	A0185	.AIR DIFFUSER ASSY		EA	1
34	R12922860	R12922860	A0185	..COVER, DIFFUSER		EA	1

Cab Ceiling Installation (Fig. 2-41)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-041-35	R12922881	R12922881	A0185	..PLATE, LATERAL		EA	1
36	R12922875	R12922875	A0185	..FIN, LATERAL		EA	4
37	R12922876	R12922876	A0185	..FIN, CENTRAL		EA	1
38	R12922898	R12922898	A0185	..SPACING, LATERAL		EA	1
39	R12922879	R12922879	A0185	..SUPPORT, LATERAL		EA	2
40	R12922877	R12922877	A0185	..PLATE, LATERAL		EA	1
41	R129228497	NO 6-32 UNCx7/8 ANSI B18.3 -S	Z9009	..SCREW, PAN HD CROSS REC - ATT.PT - NO 6-32 UNCx7/8 ANSI B18.3 - SSTL AISI 304		EA	8
42	R129228498	NO 6-32 UNCx1/2 ANSI B18.3cS	Z9009	..SCREW, HEX SOCKET HD CAP - NO 6-32 UNCx1/2 ANSI B18.3 - SSTL AISI 304		EA	8
43	R129228493	NO 10-24 UNCx7/8 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx7/8 ANSI B18.3-SSTL AISI 304		EA	4
44	R1292284911	243	E0112	..ADHESIVE, THREAD LOCKING - TYPE 243			AR
45	R12922899	R12922899	A0185	..SPRING BLOCK		EA	1
46	R129228491	NO8-UNCx1-1/4ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 8 - UNCx1-1/4 ANSI B18.3-SSTL AISI 304		EA	2
47	R12922871	R12922871	A0185	..WHEEL, ADJUSTING		EA	1
48	R12922803	R12922803	A0185	..GEAR		EA	1
49	R12922880	R12922880	A0185	..GEAR		EA	1
50	R12922862	R12922862	A0185	..PIVOT AND WASHER		EA	1
51	R12922868	R12922868	A0185	..SPRING AND BALL		EA	1
52	R129228499	NO 10-24 UNCx3/4 ANSI B18.3c1S	Z9009	..SCREW, MACHINE, PAN HD - ATT.PT CROSS REC - NO 10-24 UNCx3/4 ANSI B18.3		EA	1
53	R1292284910	NO 10 -UNC ANSI B18.3-1969	Z9009	..NUT, HEX-NO 10-UNC ANSI - ATT.PT B18.3-1969		EA	1
54	R12922861	R12922861	A0185	..LEVER, ADJUSTING		EA	1
55	R12922878	R12922878	A0185	..PIVOT		EA	5
56	R129228495	4 mm	Z9009	..RING, RETAINING -4 mm		EA	1
57	R129228496	2.5 mm	Z9009	..PIN, SPLIT-2.5 mm		EA	3
58	R129228494	NO 10-24 UNCx3/4 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx3/4 ANSI B18.3-SSTL AISI 304		EA	1
59	R12922967	R12922967	A0185	..PLATE, FIXING		EA	1
60	R1292284912	NH-06-99/E	E0087	..GASKET - TYPE ARMACEL			AR
61	R129228492	NO 6-32 UNCx5/16 ANSI B18.3aS	Z9009	..SCREW, HEX SOCKET - ATT.PT BUTTON HD - NO 6-32 UNCx5/16 ANSI B18.3-SSTL AISI 304		EA	4

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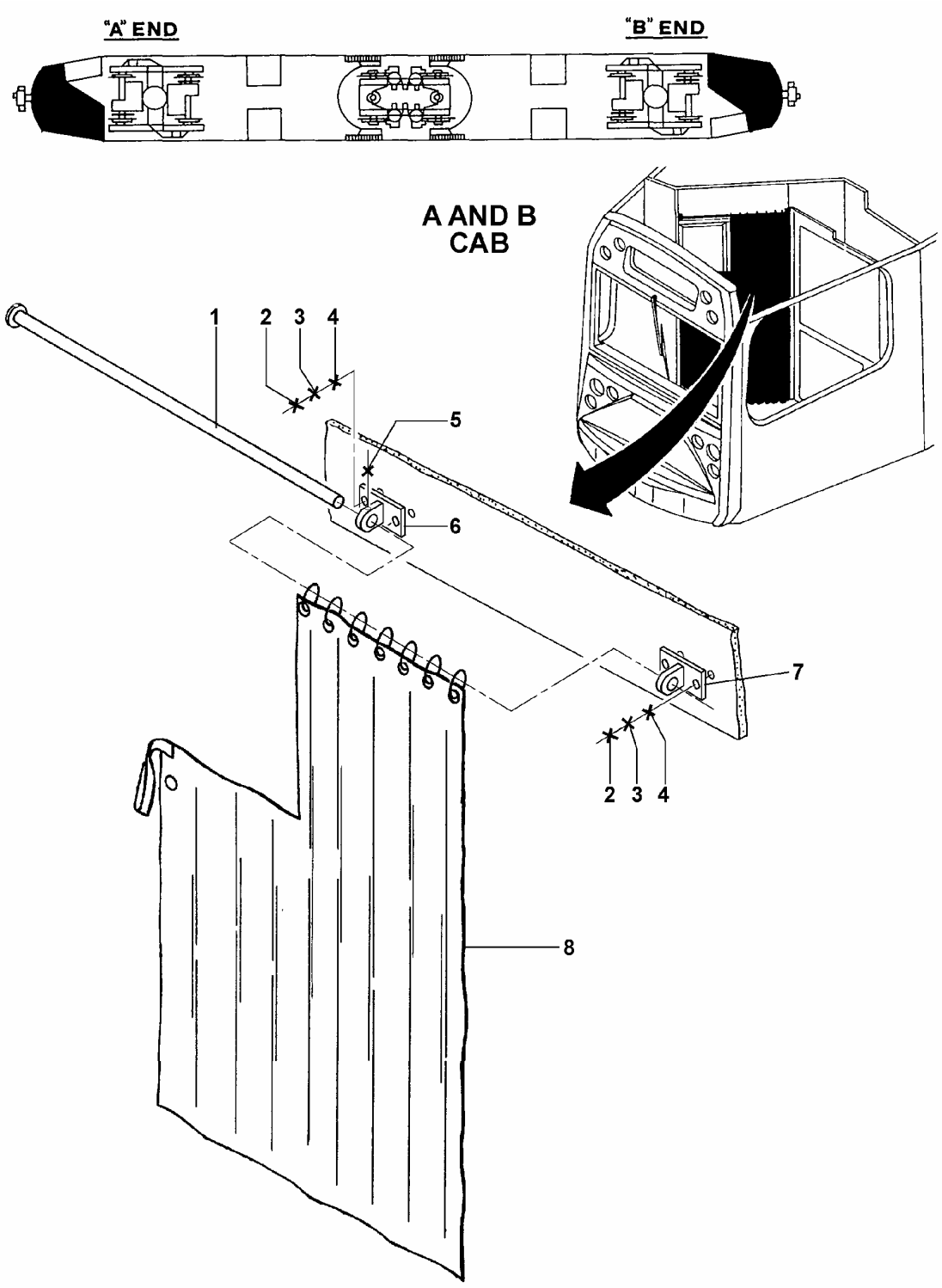


Figure 2-42 Curtain Installation

Curtain Installation (Fig. 2-42)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-042-	R12965500	R12965500	A0185	CURTAIN INSTALLATION		EA	2
1	R12965501	R12965501	A0185	.POLE		EA	1
2	R129655001	NO 10-24 UNCx3/4 ANSI B18.3aS	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD - NO 10-24 UNCx3/4 ANSI B18.3-SSTLAISI304		EA	4
3	R129655003	NO10STC515-S	Z9009	.WASHER, HEL SPRING-NO 10 -ATT.PT STC515-TYPESSTC515		EA	4
4	R129655002	NO 10STC514-S	Z9009	.WASHER, PLAIN - NO 10 STC - ATT.PT 514-TYPE SSTC 514		EA	4
5	R129655004	NO 8-32 UNCx1/4 ANSI B18.3dS	Z9009	.SCREW, SET, HEX SOCKET - - ATT.PT NO 8-32 UNCx1/4 ANSI B18.3 - SSTL AISI 304		EA	1
6	R12965510	R12965510	A0185	.SUPPORT		EA	1
7	R12965505	R12965505	A0185	.SUPPORT		EA	1
8	R12965520	R12965520	A0185	.CURTAIN ASSY		EA	1

Door Assy (Fig. 2-2-43)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-037-	R12922632	R12922632	A0185	DOOR ASSY - SEE FIG. 2-33 FOR NHA		EA	1
1	R129226321	E5-1-011-040	B0005	.LOCK		EA	4
2	R12922691	R12922691	A0185	.PANEL		EA	1
3	R129226327	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
4	R12922977	R12922977	A0185	.RUBBER SHIM - NEOPRENE BLACK 70 SHORE		EA	2
5	R129226323	G6-0-1-2	B0005	.HINGE		EA	2
6	R129226324	NO 8-32 UNCx5/8 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	4
7	R129226322	NO 8-32 UNCx1/2 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	6
8	R129226326	B4-10-103-12	B0005	.HANDLE		EA	1
9	R129226329	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	2
10	R129226328	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
11	R12922692	R12922692	A0185	.PANEL, OPENING		EA	1
12	R12922693	R12922693	A0185	.GASKET - 0.78x0.039 LG=9.84		EA	1

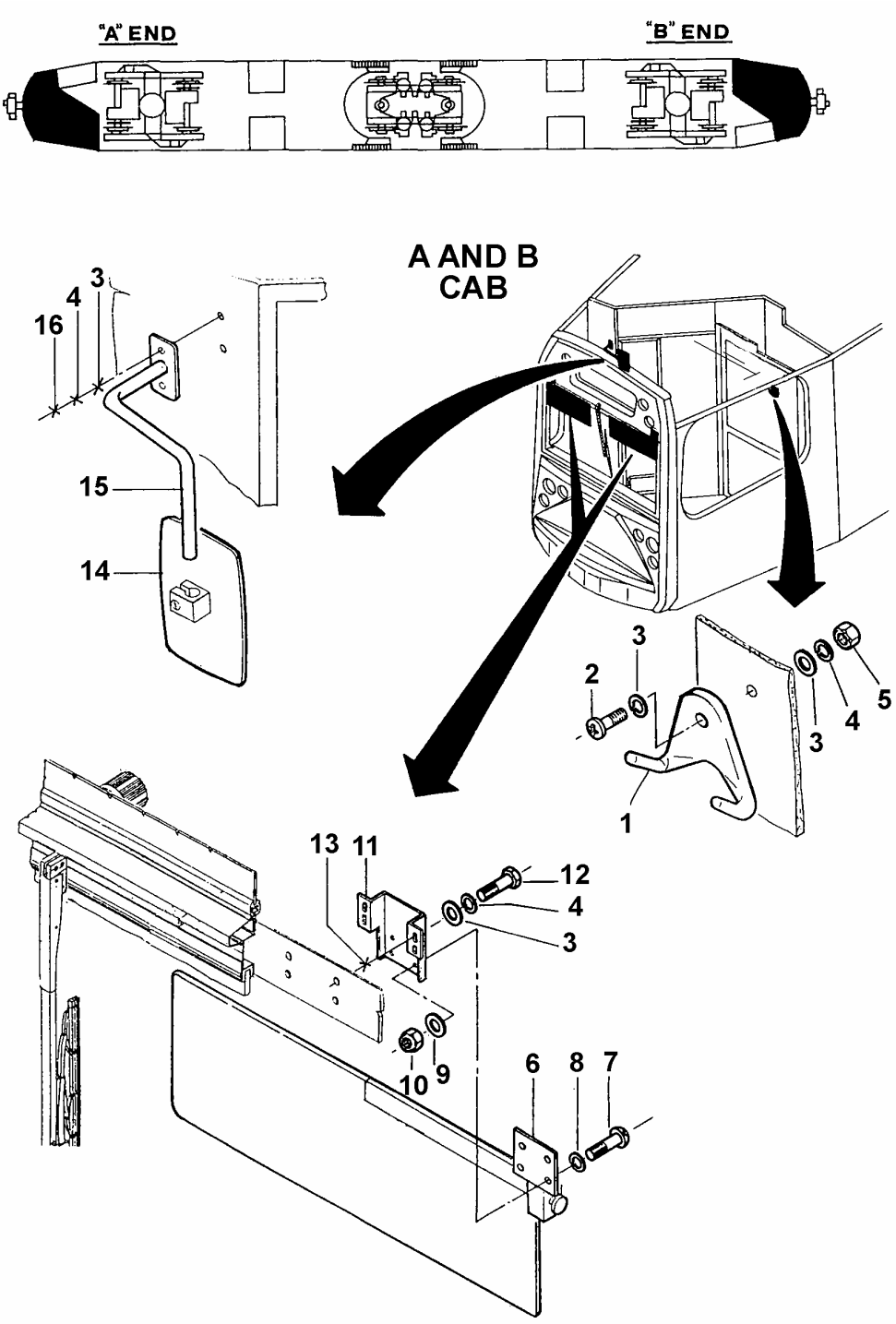


Figure 2-43 Cab Equipments Installation

Cab Equipments Installation (Fig. 2-43)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-043-	R12965100	R12965100	A0185	CAB EQUIPMENTS INSTALLATION		EA	2
1	R07965300	R07965300	A0185	.COAT HOOK		EA	1
2	R129651001	1/4-20 UNCx1 ANSI B18.3aS	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD -1/4-20 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	1
3	R129651003	1/4STC514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- -ATT.PT TYPES STC 514		EA	12
4	R129651002	1/4STC515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515 - TYPE S STC 515		EA	11
5	R1296510011	1/4STC542-N	Z9009	.NUT, HEX-1/4 STC 542-TYPE -ATT.PT N STC 542		EA	1
6	R12965400	R12965400	A0185	.VISOR		EA	2
7	R129651005	NO 8-32 UNCx3/4 ANSI B18.3aN	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD - NO 8-32 UNCx3/4 ANSI B18.3-STLZNP		EA	8
8	R129651006	NO8STC515-N	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT STC 515 - TYPE N STC 515		EA	8
9	R129651007	NO8STC514-N	Z9009	.WASHER, PLAIN - NO 8 STC - ATT.PT 514-TYPE N STC 514		EA	8
10	R129651008	NO8STC512-N	Z9009	.NUT, SELF-LOCKING, NYLON - - ATT.PT NO 8 STC 512 - TYPE N STC 512		EA	8
11	R12965401	R12965401	A0185	.SUPPORT		EA	2
12	R129651009	1/4x3/4 STC 507-N	Z9009	.BOLT, HEX-1/4x3/4 STC 507- -ATT.PT TYPE N STC 507		EA	8
13	R129651004	FW88-U0635	F1525	.RIVET NUT, CTSK HEX SHANK - ATT.PT -1/4-20 UNC		EA	8
14	R12965900	193.2.068	B0012	.MIRROR, INTERIOR		EA	1
15	R12965901	R12965901	A0185	.ARM ASSEMBLY		EA	1
16	R1296510010	1/4-20 UNCx3/4 ANSI B18.3aS	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD -1/4-20 UNCx3/4 ANSI B18.3-SSTL AISI 304		EA	2

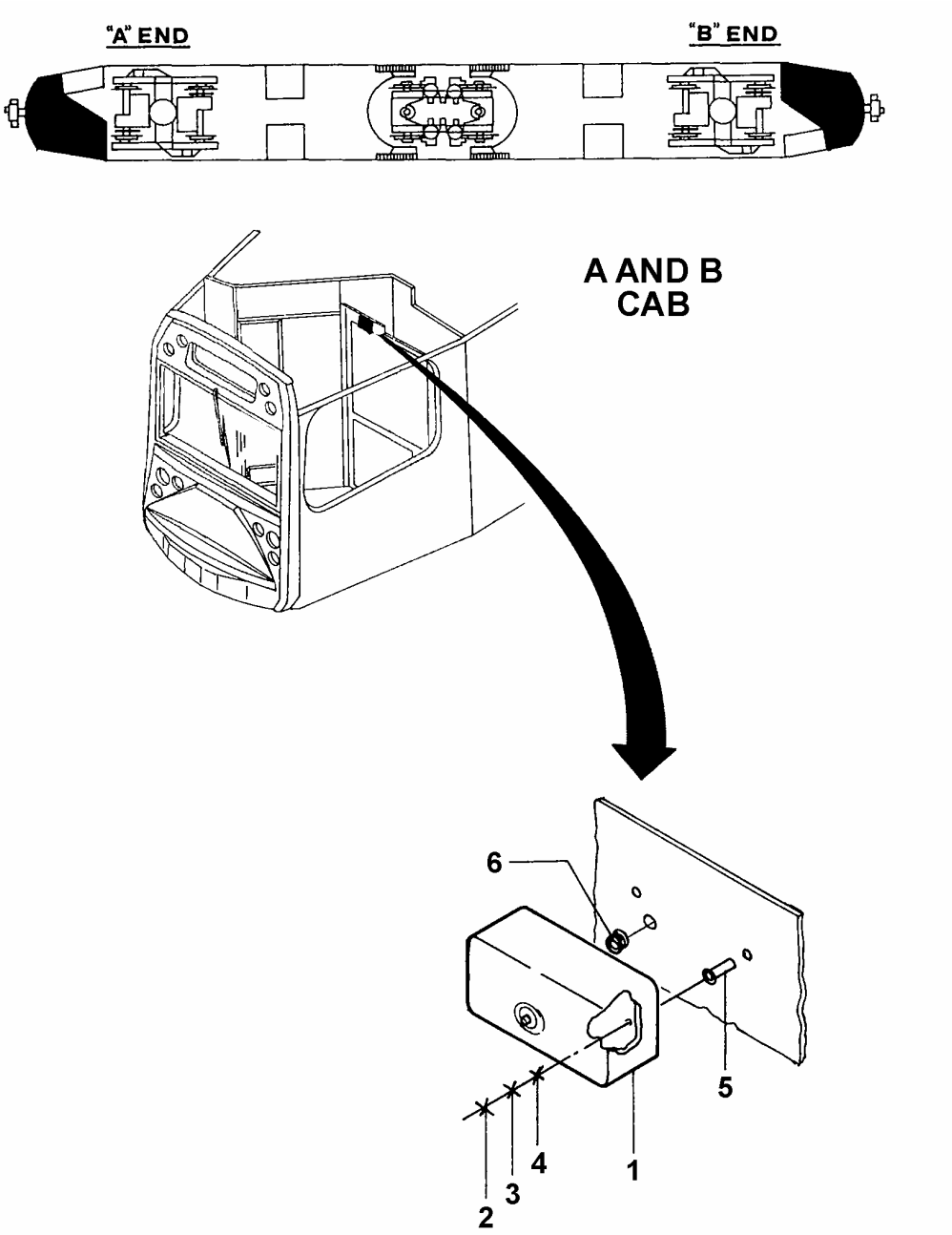
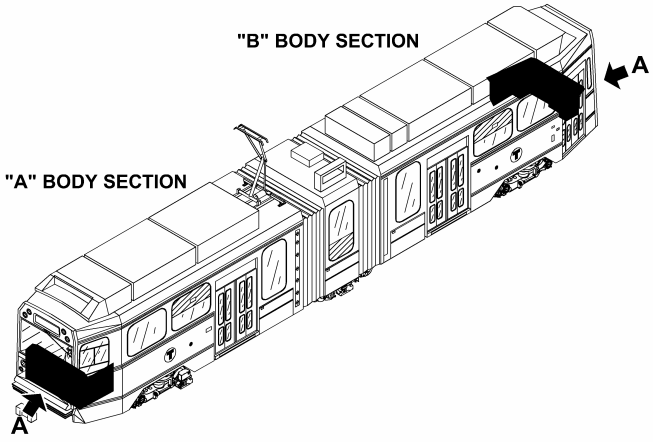
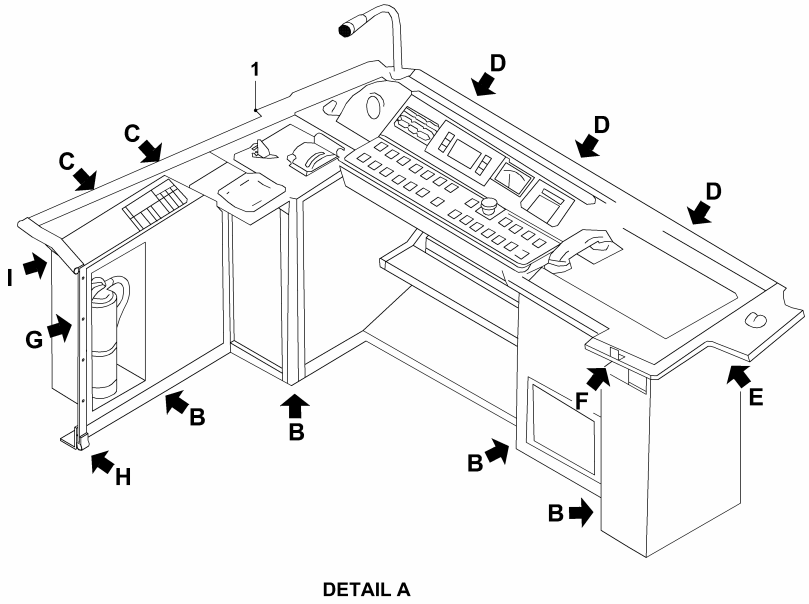


Figure 2-44 Passenger Stop Request Alarm Instl

Passenger Stop Request Alarm Instl (Fig. 2-44)

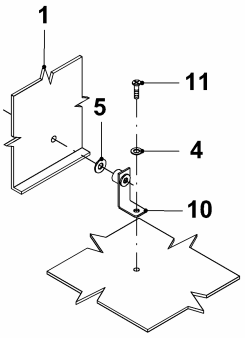
Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-044-	R12965200	R12965200	A0185	PASSENGER STOP REQUEST ALARM INSTL		EA	2
1	R12492707	AE-71215	E0078	.CHIME		EA	1
2	R129652001	1/4x3/4 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT 1/4x3/4 STC 510 - TYPE S STC 510		EA	2
3	R129652003	1/4STC515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515-TYPES STC 515		EA	2
4	R129652002	1/4 STC 514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- - ATT.PT TYPES STC 514		EA	2
5	R129652004	1/4-20 UNC-RS	Z9009	.RIVET NUT, HEX SHANK - - ATT.PT 1/4-20 UNC-SSTL		EA	2
6	R129652005	DA 60/90/30	E0070	.CABLE BUSHING - NEOPRENE RUBBER		EA	1



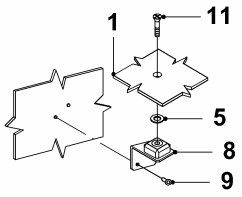


DETAIL A

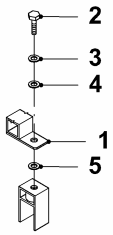
Figure 2-45 Cab Dashboard Installation (Sheet 1 of 2)



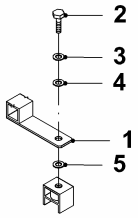
DETAIL B



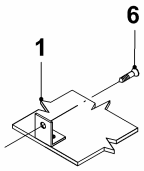
DETAIL C



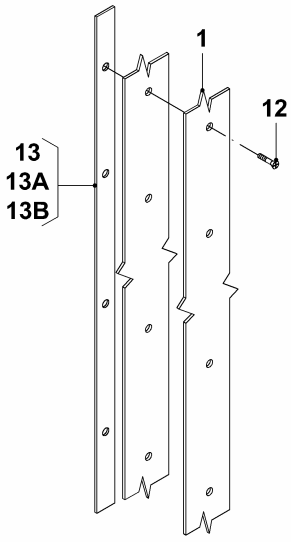
DETAIL D



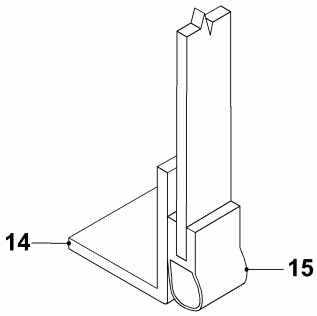
DETAIL E



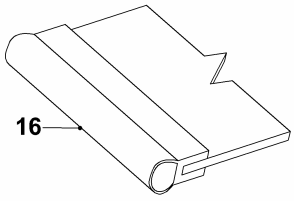
DETAIL F



DETAIL G



DETAIL H



DETAIL I

Figure 2-45 Cab Dashboard Installation (Sheet 2 of 2)

Cab Dashboard Installation (Fig. 2-45)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-045-	R12922000	R12922000	A0185	CAB DASHBOARD INSTALLATION		EA	2
1	R12922100	R12922100	A0185	.CONSOLE CABINET ASSEMBLY - SEE FIG. 2-46 FOR DETAIL		EA	1
2	R129220003	1/4x3/4 STC 507 -S	Z9009	.BOLT, HEX-1/4x3/4 STC 507- - ATT.PT TYPE S STC 507		EA	2
3	R129220007	1/4STC515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515-TYPES STC 515		EA	2
4	R129220004	1/4 STC 514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- - ATT.PT TYPES STC 514		EA	12
5	R129220005	R129220005	A0185	.RUBBER SHIM - ATT.PT		EA	12
6	R129220008	NO 8-32 UNCx1/2 ANSI B18.6.4d5N	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE I REC - NO 8-32 UNCx1/2 ANSI B18.6.4- STL ZNP		EA	2
7	R129220002	1/4-20 UNCx7/8 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT -1/4-20 UNCx7/8 ANSI B18.3 - SSTL AISI 304		EA	2
8	R12922010	R12922010	A0185	.BRACKET		EA	2
9	R129220001	0.19x0.44	Z9009	.RIVET, POP, SSD - 0.19x0.44 - - ATT.PT SSTL AISI 305		EA	4
10	R12922491	R12922491	A0185	.BRACKET		EA	6
11	R129220006	1/4-20 UNCx1 ANSI B18.6.4e2S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE I REC -1/4-20 UNCx1 ANSI B18.6.4- SSTL AISI 304		EA	6
12	R129220009	NO 8x5/8 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT NO 8x5/8 STC 510 - TYPE S STC 510		EA	6
13A	R1292200016	R1292200016	A0185	.PLATE		EA	1
13B	R1292200015	R1292200015	A0185	.RECTANGLE - (ALTERNATIVE)		EA	4
13C	R1292200010	NO 8-32 UNCx1/2	Z9009	.CAGE, NYLON - NO 8-32 UNCx1/2 - (ALTERNATIVE)		EA	4
14	R1292200013	R1292200013	A0185	.SHEET, '		EA	1
15	R1292200011	309Z0445	F1294	.PROFILE, TIGHTENING		FT	0.13
16	R1292200012	309Z0439	F1294	.PROFILE, TIGHTENING		FT	3.6

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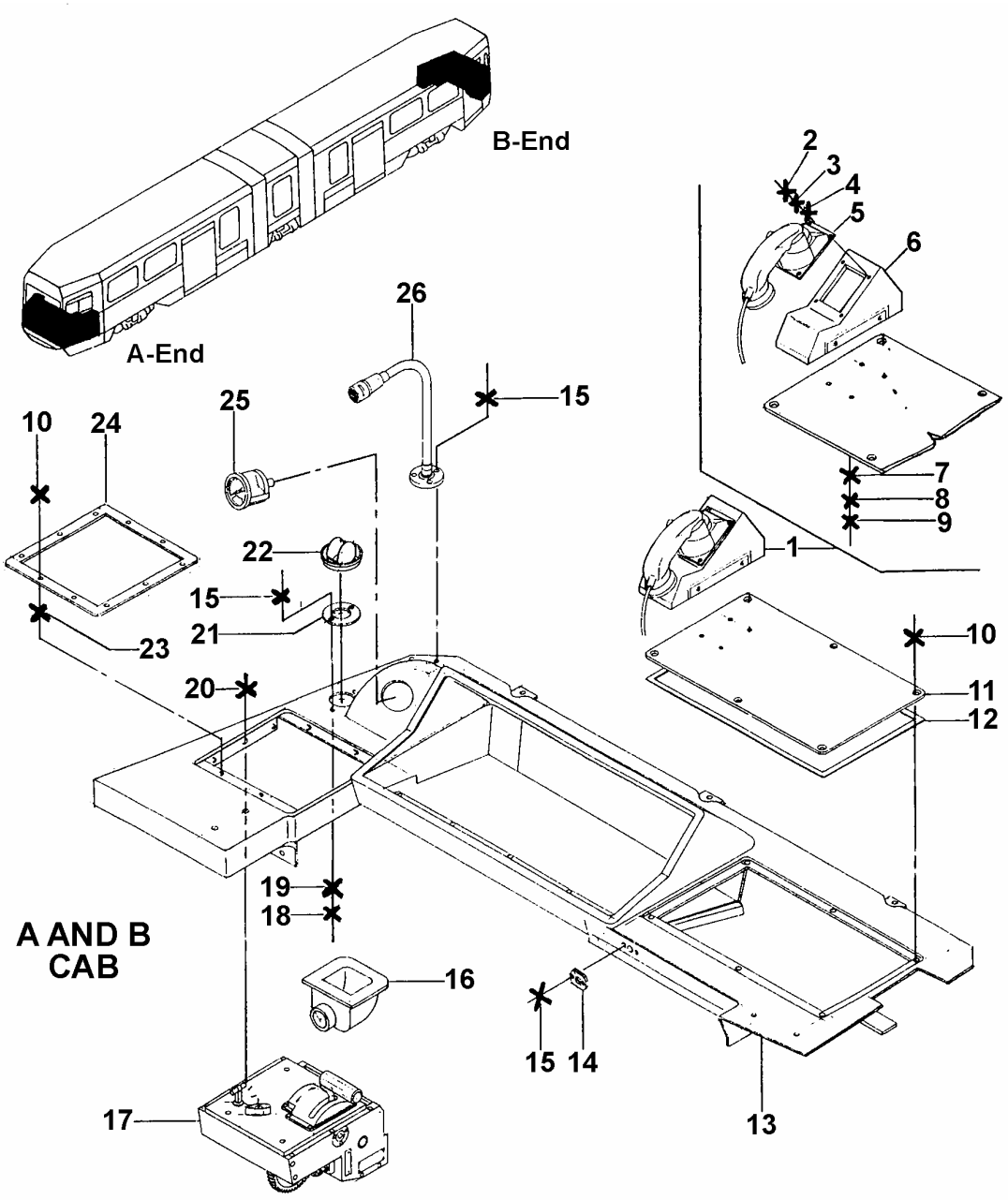

Figure 2-46 Console Cabinet Assembly (Sheet 1 of 4)

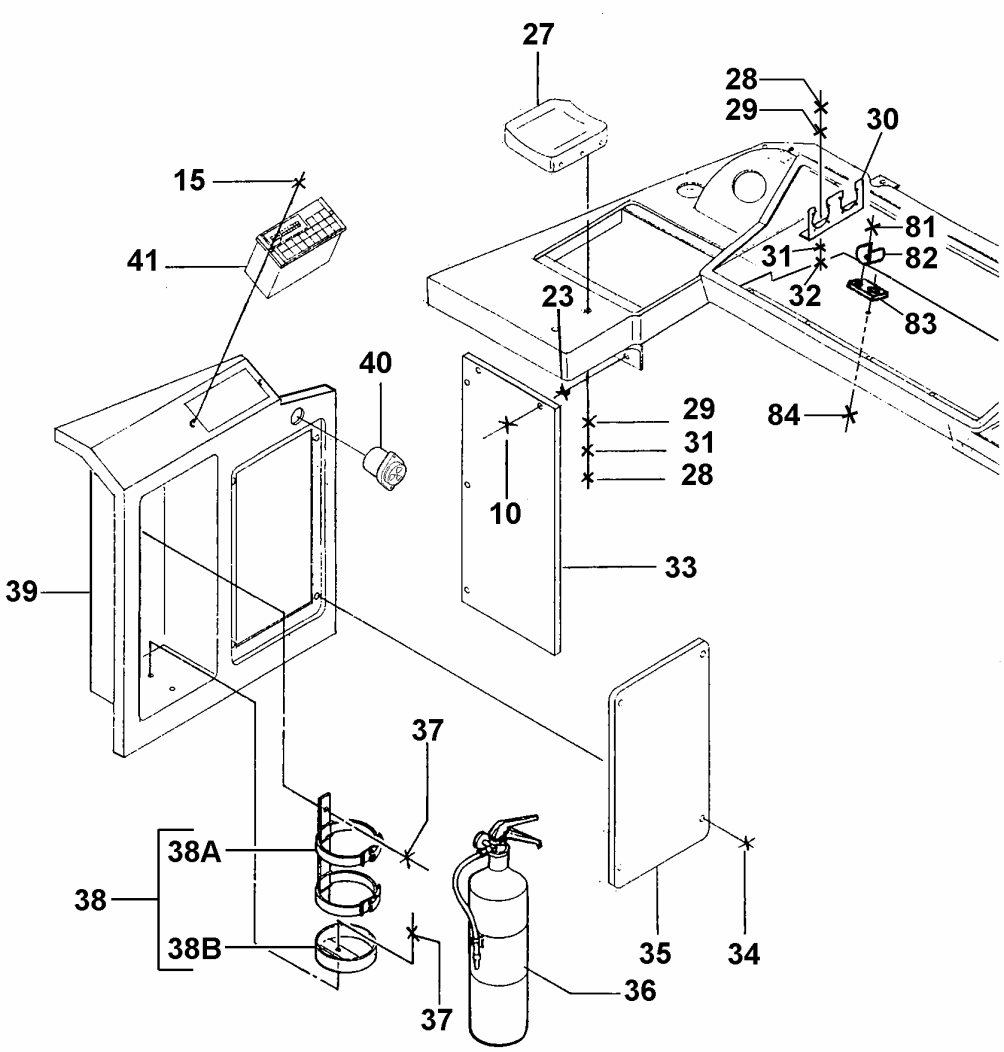

Figure 2-46 Console Cabinet Assembly (Sheet 2 of 4)

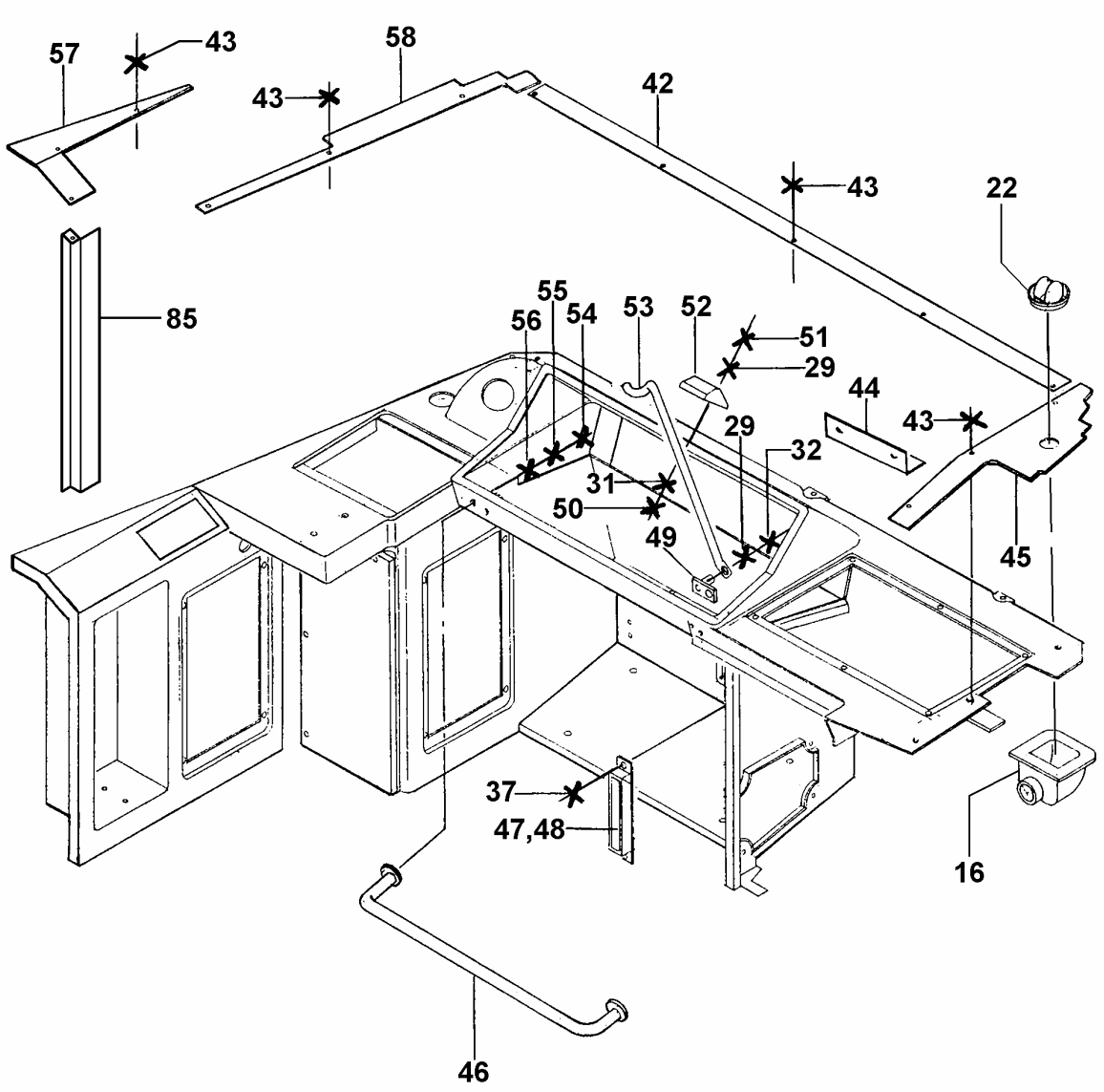

Figure 2-46 Console Cabinet Assembly (Sheet 3 of 4)

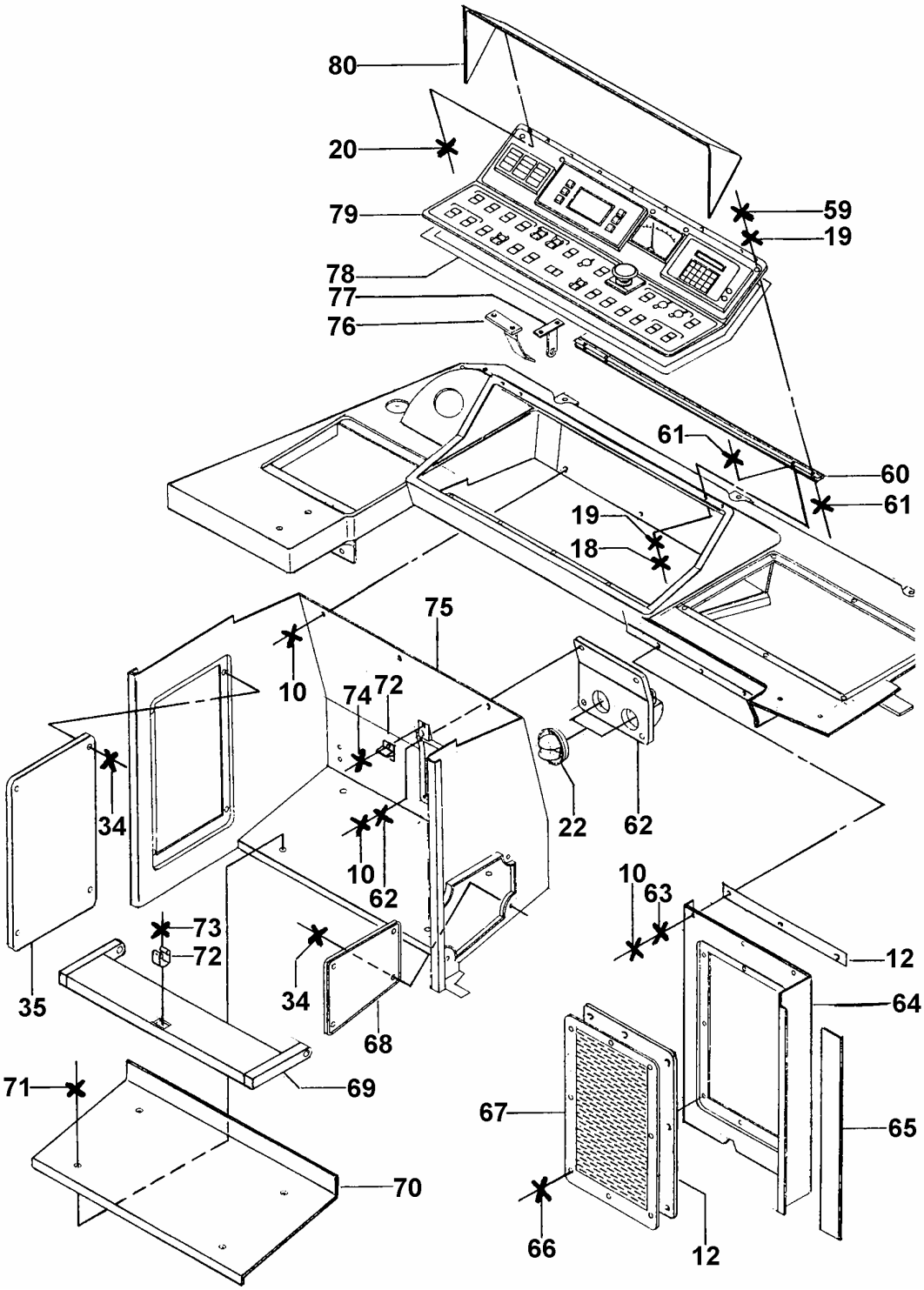

Figure 2-46 Console Cabinet Assembly (Sheet 4 of 4)

Console Cabinet Assembly (Fig. 2-46)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-046-	R12922100	R12922100	A0185	CONSOLE CABINET ASSEMBLY - SEE FIG. 2-45 FOR NHA		EA	2
1	R12922020	R12922020	A0185	.HANDSET MOUNTING		EA	1
2	R129220204	NO 8x5/8 STC 511 -N	Z9009	..SCREW, HEX SOCKET HD - ATT.PT CAP - NO 8x5/8 STC 511 - TYPE N STC 511		EA	4
3	R129220206	NO8STC515-N	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT STC 515 - TYPE N STC 515		EA	4
4	R129220205	NO 8 STC 514-N	Z9009	..WASHER, PLAIN - NO 8 STC - ATT.PT 514-TYPE N STC 514		EA	4
5	R12466104	N840-5110-001	B0023	..HANDSET ASSY (A9) - SEE FIG. 12-1 FOR NHA		EA	1
6	R12922050	R12922050	A0185	..SUPPORT		EA	1
7	R129220203	1/4 STC 515-S	Z9009	..WASHER, HEL SPRING-1/4 - ATT.PT STC 515 - TYPE S STC 515		EA	4
8	R129220202	1/4 STC 514-S	Z9009	..WASHER, PLAIN-1/4 STC 514 - ATT.PT -TYPES STC 514		EA	4
9	R129220201	1/4x3/4 STC 507-S	Z9009	..BOLT, HEX - 1/4x3/4 STC 507 - - ATT.PT TYPE S STC 507		EA	4
10	R129221953	NO 10-24 UNCx1 ANSI B18.3b	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx 1 ANSI B18.3		EA	23
11	R12922104	R12922104	A0185	.COVER, UPPER		EA	1
12	R12922158	R12922158	A0185	.ADHESIVE STRIPE - 10x2 - NEOPRENE		FT	29.5
13	R12922101	R12922101	A0185	.FRAME, UPPER		EA	1
14	R12922157	R12922157	A0185	.PLATE		EA	1
15	R129221957	NO 8-32 UNCx5/8 ANSI B18.3b	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 8-32 UNCx5/8 ANSI B18.3		EA	27
16	R12922108	R12922108	A0185	.MANIFOLD, ONE AIR DIFFUSER		EA	2
17	R12492201	2681F46G01	B0013	.MASTER CONTROLLER, TYPE XMA-274 - SEE FIG. 8-2 FOR DETAIL		EA	1
18	R1292219610	NO 8 STC 512-N	Z9009	.NUT, SELF-LOCKING, NYLON - - ATT.PT NO 8 STC 512 - TYPE N STC 512		EA	17
19	R129221963	NO 8 STC 514-N	Z9009	.WASHER, PLAIN - NO 8 STC - ATT.PT 514-TYPE N STC 514		EA	24
20	R1292219614	NO 10-32 UNFx7/8 ANSI B18.3bN	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-32 UNFx7/8 ANSI B18.3-STLZNP		EA	6
21	R12922116	R12922116	A0185	.ADAPTER		EA	1
22	R12922171	62292	B0004	.AIR DIFFUSER VENT, TYPE P145		EA	4
23	R1292219616	5015/4/1	E0039	.WASHER, NYLON - ATT.PT		EA	10
24	R12922115	R12922115	A0185	.FRAME		EA	1
25	R12586116	1/319601	B0014	.BACKLIGHTED MANOMETER - SEE FIG. 11-2 FOR NHA -11-4 FOR DETAIL		EA	1
26	R12466103	N840-5010-001	B0023	.MICROPHONE, GOOSENECK (A10) - SEE FIG. 12-1 FOR NHA		EA	1
27	R12922110	R12922110	A0185	.ARMREST		EA	1
28	R129221955	1/4x1 STC 507 -N	Z9009	.BOLT, HEX - 1/4x1 STC 507 - - ATT.PT TYPE N STC 507		EA	4
29	R129221964	1/4 STC 514-N	Z9009	.WASHER, PLAIN-1/4 STC 514- - ATT.PT TYPE N STC 514		EA	8
30	R12495607	R12495607	A0185	.BRACKET, CONNECTORS		EA	1
31	R129221968	1/4 STC 515-N	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515 - TYPE N STC 515		EA	6

Console Cabinet Assembly (Fig. 2-46)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-046- 32	R1292219611	1/4STC512-N	Z9009	.NUT, SELF-LOCKING-1/4 STC - ATT.PT 512-TYPENSTC 512		EA	2
33	R12922112	R12922112	A0185	.COVER		EA	1
34	R129221958	81-18-160-16	B0005	TURN STUDS-1/4		EA	12
35	R12922105	R12922105	A0185	.COVER		EA	2
36	R12965600	R12965600	A0185	.FIRE EXTINGUISHER		EA	1
37	R1292219510	1/4-20 UNCx3/4 ANSI B18.3bN	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD -1/4-20 x 3/4 ANSI B18.3 - STL ZNP		EA	7
38	R07965610	R07965610	A0185	.EXTINGUISHER, SUPPORT		EA	1
38A	R07965611	R07965611	A0185	..SUPPORT, HIGH		EA	1
38B	R07965612	R07965612	A0185	..SUPPORT, LOW		EA	1
39	R12922107	R12922107	A0185	.FRAME, LEFT SIDE		EA	1
40	R12492715	CH-09-525-S	B0071	.BUZZER - SEE FIG. 12-1 FOR NHA		EA	1
41	R12498164	94905047761000 110/002	B0022	.DRIVER PANEL, DP 2100 - SEE FIG. 14-1 FOR NHA -14-2 FOR DETAIL		EA	1
42	R12922183	R12922183	A0185	.MOLDING		EA	1
43	R1292219511	NO 8-32 UNCx3/4 - N	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT NO 8-32 UNCx3/4 - STL ZNP		EA	13
44	R12922193	R12922193	A0185	.MOLDING		EA	1
45	R12922184	R12922184	A0185	.MOLDING		EA	1
46	R12922080	R12922080	A0185	.HANDRAIL		EA	1
47	R12492253	R12492253	A0185	.SILENT ALARM, SUPPORT - TAPE SWITCH, TYPE IEC 106		EA	1
48	R12492252	R12492252	A0185	.SILENT ALARM - TAPE SWITCH, TYPE IEC 1313A 235, GREY		EA	1
49	R12922190	R12922190	A0185	.SUPPORT		EA	1
50	R1292219618	1/4STC542-N	Z9009	.NUT, HEX-1/4 STC 542-TYPE - ATT.PT N STC 542		EA	2
51	R1292219617	1/4x1 STC510-N	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT 1/4x1 STC 510 - TYPE N STC 510		EA	2
52	R12922135	R12922135	A0185	.RETAINER, OPERATOR CONSOLE		EA	1
53	R12922154	R12922154	A0185	.POLE		EA	1
54	R129221952	3/8x7/8 STC 511 - N	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - 3/8x7/8 STC 511 - TYPE N STC 511		EA	6
55	R129221965	3/8STC515-N	Z9009	.WASHER, HEL SPRING - 3/8 - ATT.PT STC 515 - TYPE N STC 515		EA	6
56	R129221961	3/8 STC 514 - N	Z9009	.WASHER, PLAIN - 3/8 STC 514 - - ATT.PT TYPE N STC 514		EA	6
57	R12922185	R12922185	A0185	.MOLDING		EA	1
58	R12922182	R12922182	A0185	.MOLDING		EA	1
59	R1292219612	NO 8 STC 512-N	Z9009	.NUT, SELF-LOCKING, NYLON - - ATT.PT NO 8 STC 512 - TYPE N STC 512		EA	7
60	R12922065	R12922065	A0185	.HINGE		EA	1
61	R1292219514	NO 8-36 UNFx1/2 ANSI B18.3bS	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 8-36 UNFx1/2 ANSI B18.3 - SSTL AISI 304		EA	4
62	R12922109	R12922109	A0185	.MANIFOLD, TWO AIR DIFFUSERS		EA	1
63	R1292219512	NO 10 STC 520-S	Z9009	.WASHER, CTSK FINISHING - - ATT.PT NO 10 STC 520 - TYPE S STC 520		EA	7
64	R12922106	R12922106	A0185	.COVER, RIGHT SIDE		EA	1
65	R12922194	R12922194	A0185	.MOLDING		EA	1

Console Cabinet Assembly (Fig. 2-46)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-046- 66	R129221951	NO 10-24 UNCx5/8 ANSI B18.3a	Z9009	.SCREW, HEX SOCKET - ATT.PT BUTTON HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	8
67	R12922114	R12922114	A0185	.AIR INTAKE GRATE		EA	1
68	R12922103	R12922103	A0185	.COVER		EA	1
69	R12922113	R12922113	A0185	.MOVABLE FOOTBOARD		EA	1
70	R12922111	R12922111	A0185	.FOOTBOARD		EA	1
71	R129221954	NO 10-24 UNCx1 ANSI B18.3b	Z9009	.SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx 1 ANSI B18.3		EA	4
72	R1292219613	R1292219613	A0185	.SPRING AND CLAMP		EA	1
73	R1292219513	TAP.D412BS	Z9009	.RIVET, POP - TAP.D 412 BS - ATT.PT		EA	2
74	R1292219515	TAP.D 425 BS	Z9009	.RIVET, POP - TAP.D 425 BS - ATT.PT		EA	2
75	R12922102	R12922102	A0185	.PANEL, CENTRAL		EA	1
76	R12922155	R12922155	A0185	.BRACKET		EA	1
77	R12922189	R12922189	A0185	.LOCK PLATE, POLE		EA	1
78	R12922156	R12922156	A0185	.ADHESIVE STRIPE - 10x5		FT	4.92
79	R12494230	R12494230	A0185	.OPERATOR CONSOLE ASSY - SEE FIG. 7-5 FOR DETAIL		EA	1
80	R12922520	R12922520	A0185	.VISOR		EA	1
81	R1292219620	NO6-32UNCx3/16	Z9009	.SCREW, HEX SOCKET HD - NO - ATT.PT 6-32 UNCx3/16-SSTL		EA	1
82	R1292219621	R1292219621	A0185	.CLIP - TYPE 08 09		EA	1
83	R12922136	R12922136	A0185	.PLATE, CLIP MTG		EA	1
84	R1292219619	NO 8-32 UNCx3/8	Z9009	.SCREW, HEX SOCKET F.C.H. - - ATT.PT NO 8-32 UNC x 3/8 - SSTL		EA	1
85	R12922186	R12922186	A0185	.MOLDING		EA	1

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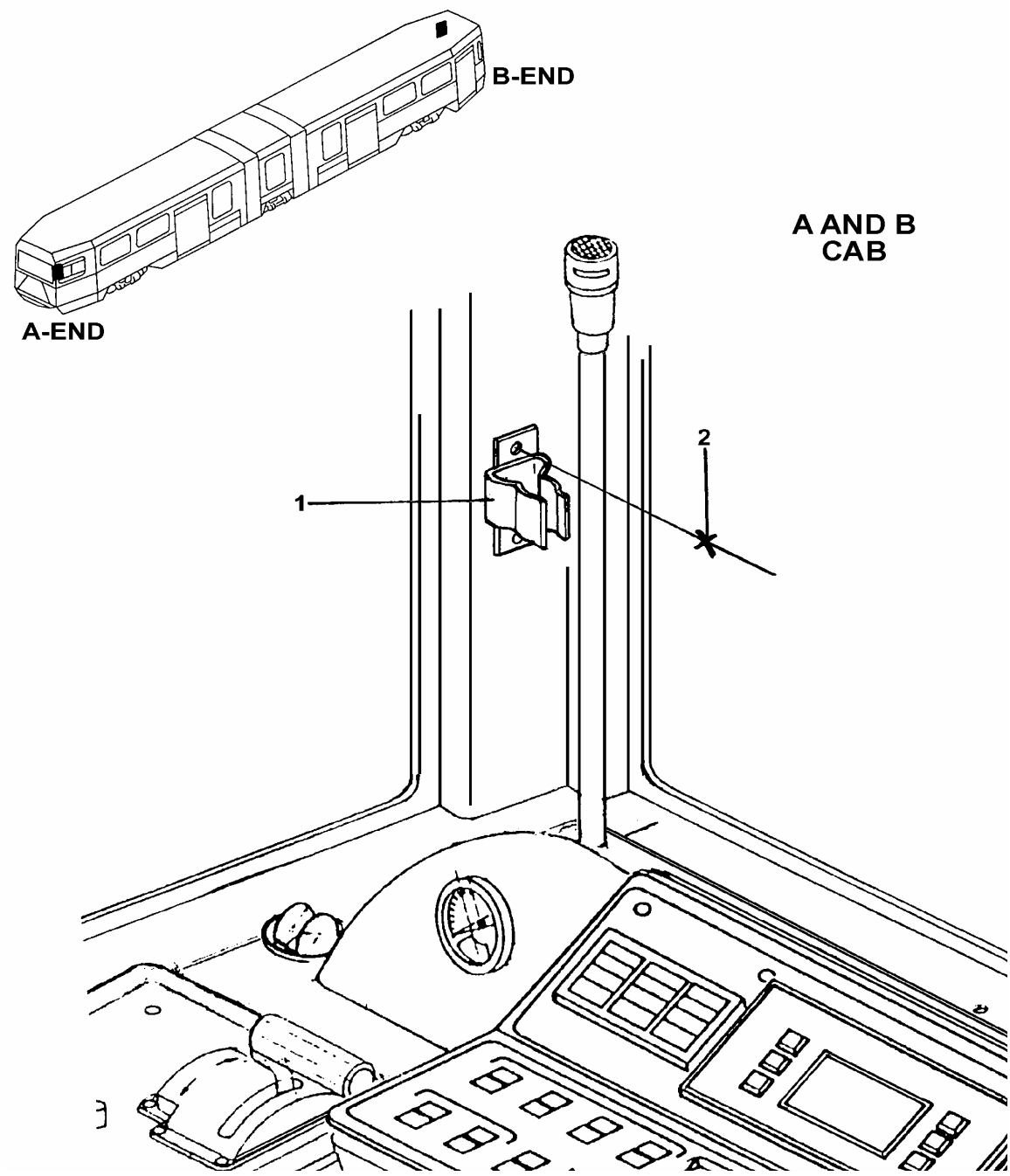

Figure 2-47 Microphone Lock Assy

Microphone Lock Assy (Fig. 2-47)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-047-1 2	R12922495	R12922495	A0185	MICROPHONE LOCK ASSY .SPRING, LOCK		EA	2
	R12922497	R12422497	A0185	.RIVET, POP,		EA	1
	R129224951	0.16x0.29	Z9009	SSD - 0.16x0.29 - - ATT.PT SSTL AISI 305		EA	2

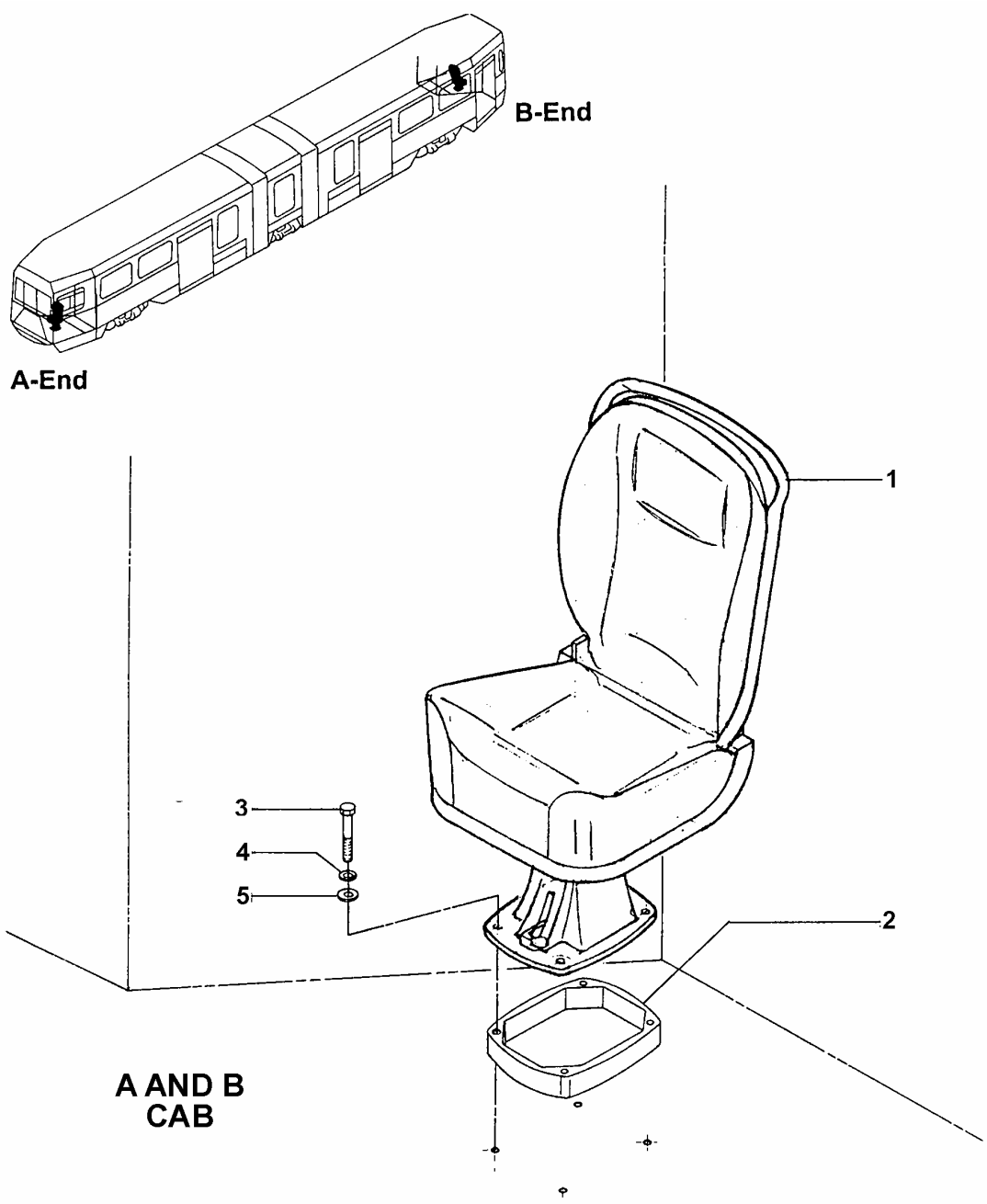

Figure 2-48 Operator Seat Installation

Operator Seat Installation (Fig. 2-48)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-048-	R12950100	R12950100	A0185	OPERATOR SEAT INSTALLATION		EA	2
1	R12950101	65-600517-901	E0015	.OPERATOR SEAT ASSY - SEE FIG. 2-49 FOR DETAIL		EA	1
2	R12950102	R12950102	A0185	.SPACER		EA	1
3	R129501001	3/8x2-3/4 STC 507 - N	Z9009	.BOLT, HEX - 3/8x2-3/4 STC 507 - ATT.PT - TYPE N STC 507		EA	4
4	R129501003	3/8STC515-N	Z9009	.WASHER, HEL SPRING - 3/8 - ATT.PT STC 515 - TYPE N STC 515		EA	4
5	R129501002	3/8 STC 514 - N	Z9009	.WASHER, PLAIN -3/8 STC 514 - - ATT.PT TYPE N STC 514		EA	4

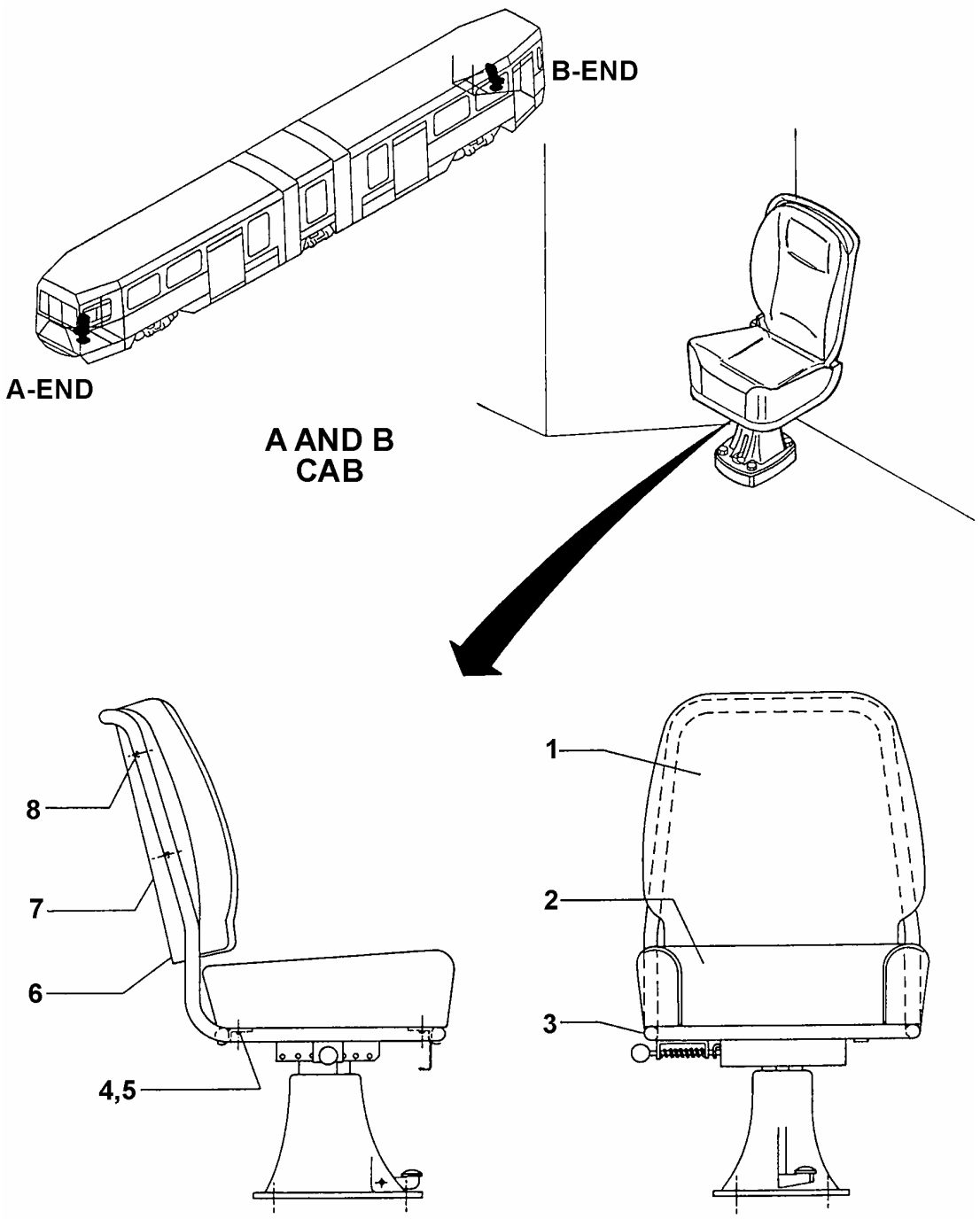

Figure 2-49 Operator Seat Assy

Operator Seat Assy (Fig. 2-49)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-049-	R12950101	65-600517-901	E0015	OPERATOR SEAT ASSY - SEE FIG. 2-48 FOR NHA		EA	2
1	67-020322-210	67-020322-210	E0015	.BACK ASSY		EA	1
2	65-600517-910	65-600517-910	E0015	.CUSHION ASSY		EA	1
3	65-600517-902	65-600517-902	E0015	TUBE, TOP AND BOTTOM ASSY		EA	1
4	0050103016ZN	0050103016ZN	E0015	.SCREW, SPECIAL - ATT.PT		EA	4
5	65-600517-909	65-600517-909	E0015	.CLIP-CUSHION		EA	4
6	0080802008ZN	0080802008ZN	E0015	.SCREW, SPECIAL - ATT.PT		EA	4
7	67-020342-007	67-020342-007	E0015	.METAL BACK PANEL		EA	1
8	0081903028ZN	0081903028ZN	E0015	.SCREW, SPECIAL - ATT.PT		EA	4
9	0081913028ZN	0081903028ZN	E0015	.SCREW, SPECIAL - ATT.PT		EA	4
10	0081903028ZN	0081903028ZN	E0015	.SCREW, SPECIAL - ATT.PT		EA	4

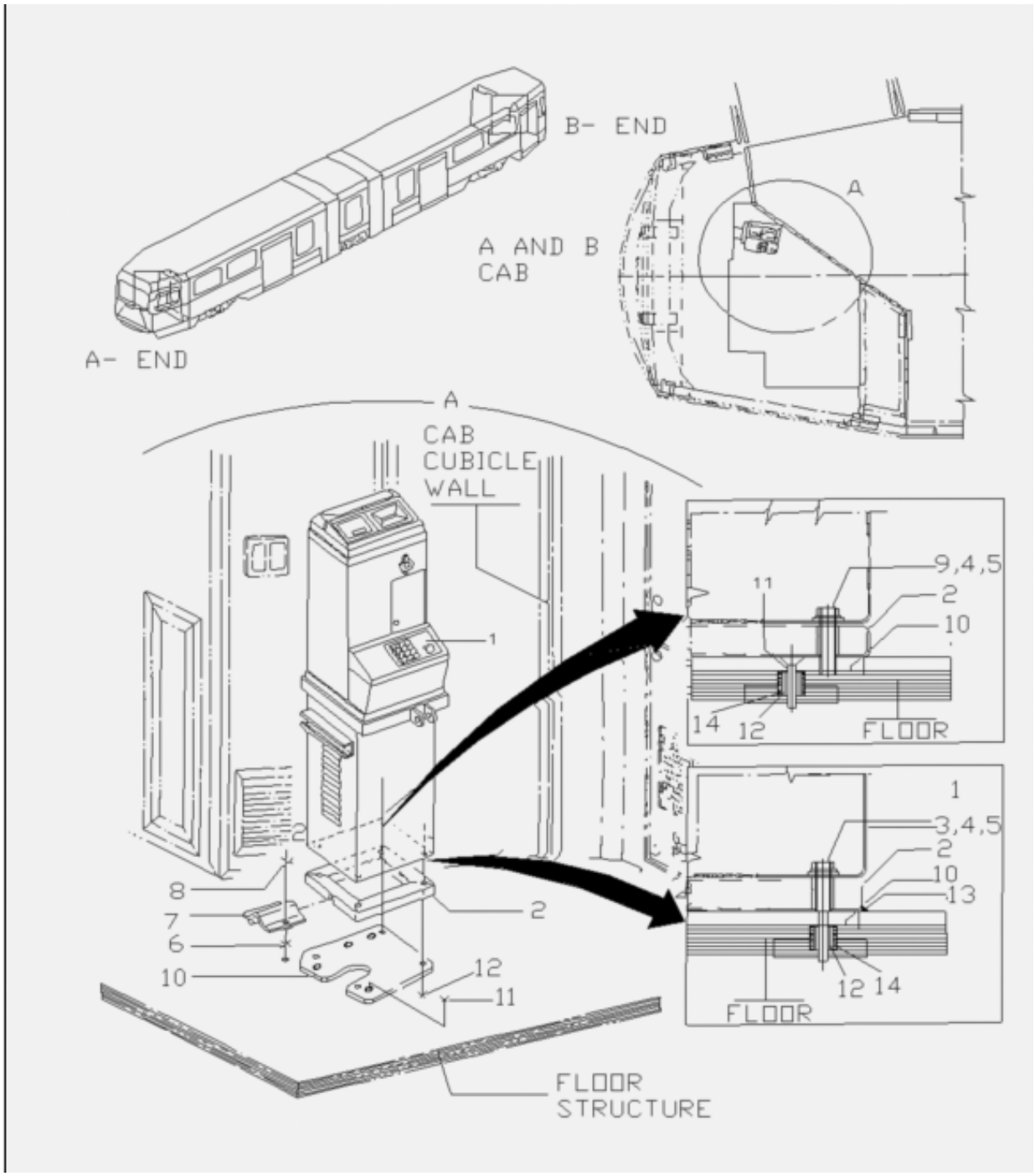

Figure 2-50 Fare Box Installation

Fare Box Installation (Fig. 2-50)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-050-	R12922910	R12922910	A0185	FARE BOX INSTALLATION		EA	2
1	R12922911	R12922911	B0001	.FARE BOX - (MBTA SUPPLY)		EA	1
2	R12922915	R12922915	A0185	.SPACER		EA	1
3	R129229101	5/16-18 TYPE S	Z9009	.BOLT, HEX - 5/16x3-1/2" LONG - ATT.PT - TYPE S STC 507		EA	1
4	R129229103	5/16 STC 515-S	Z9009	.WASHER, HEL SPRING - 5/16 - ATT.PT STC 515-TYPES STC 515		EA	4
5	R129229102	5/16 STC 514-S	Z9009	.WASHER, PLAIN - 5/16 STC 514 - ATT.PT -TYPES STC 514		EA	4
6	R129229106	418011717-0	B0002	THREADED INSERT, BRASS -1/4 -20 UNC		EA	2
7	R12922920	R12922920	A0185	.COVER		EA	1
8	R129229105	1/4-20 UNCx3/4-S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT 1/4-20 UNCx3/4 - SSTL 18.8		EA	2
9	R129229107	5/16-18,TYPE S	Z9009	.BOLT, HEX - 5/16x1 -3/4 LONG-ATT.PT		EA	3
10	R12922999	R12922999	A0185	.PLATE, ADAPTER		EA	1
11	R129229108	5/16-18 ,TYPE S	Z9009	.SCREW, FLAT HD - 5/16 x2 /1 /4" LONG - ATT.PT		EA	3
12	R1292291010	1/2 " DIA STAILNESS STEEL 304 OR EQUIVALENT		SPACER TUBE		EA	4
13	R129229104	DOW CORNING 732 BLACK		SEALANT			AR
14	R129229109	LOCTITE 242 OR EQUIVALENT		THREAD LOCKER			AR

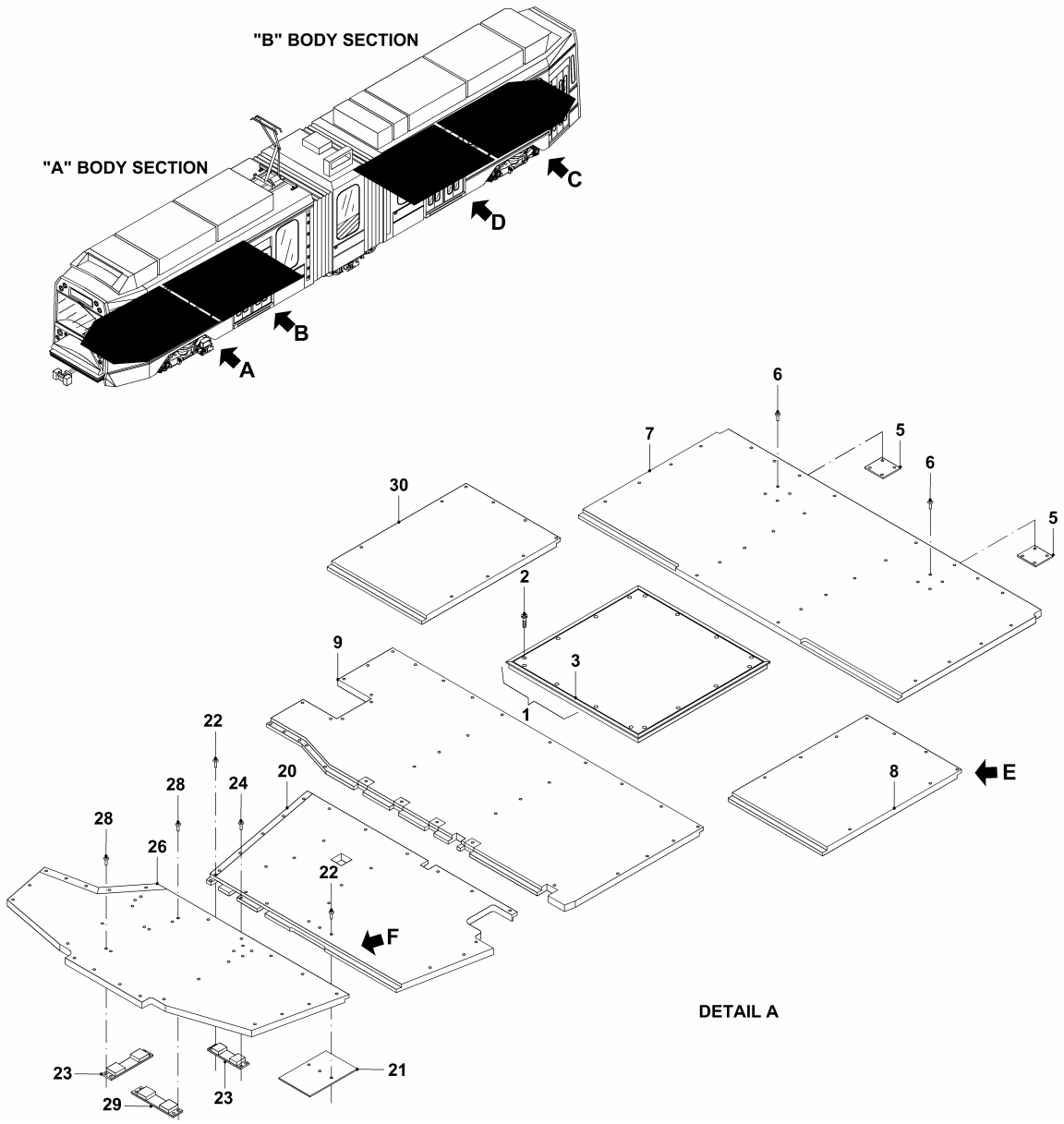

Figure 2-51 Floor Assy (Sheet 1 of 4)

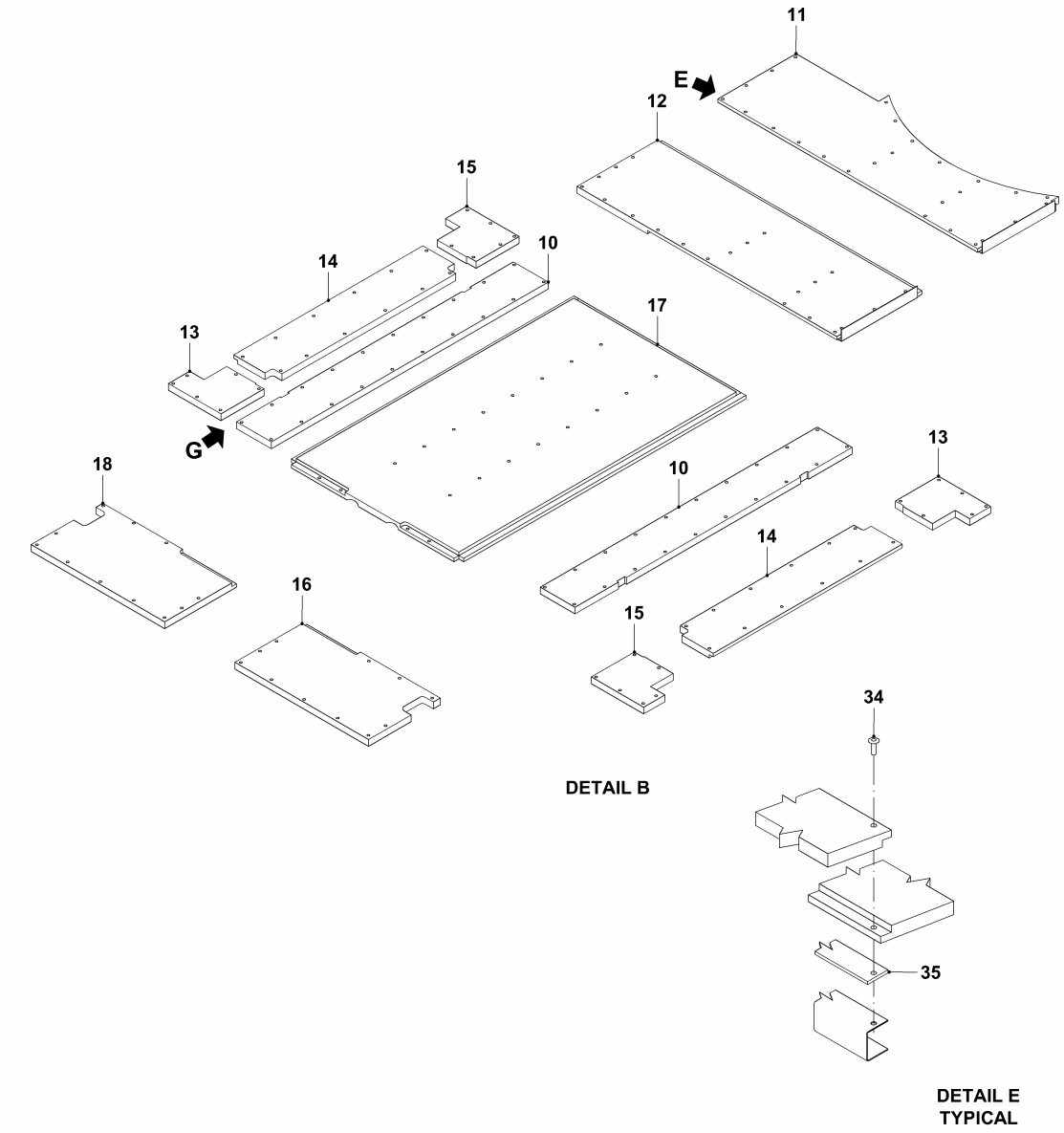

Figure 2-51 Floor Assy (Sheet 2 of 4)

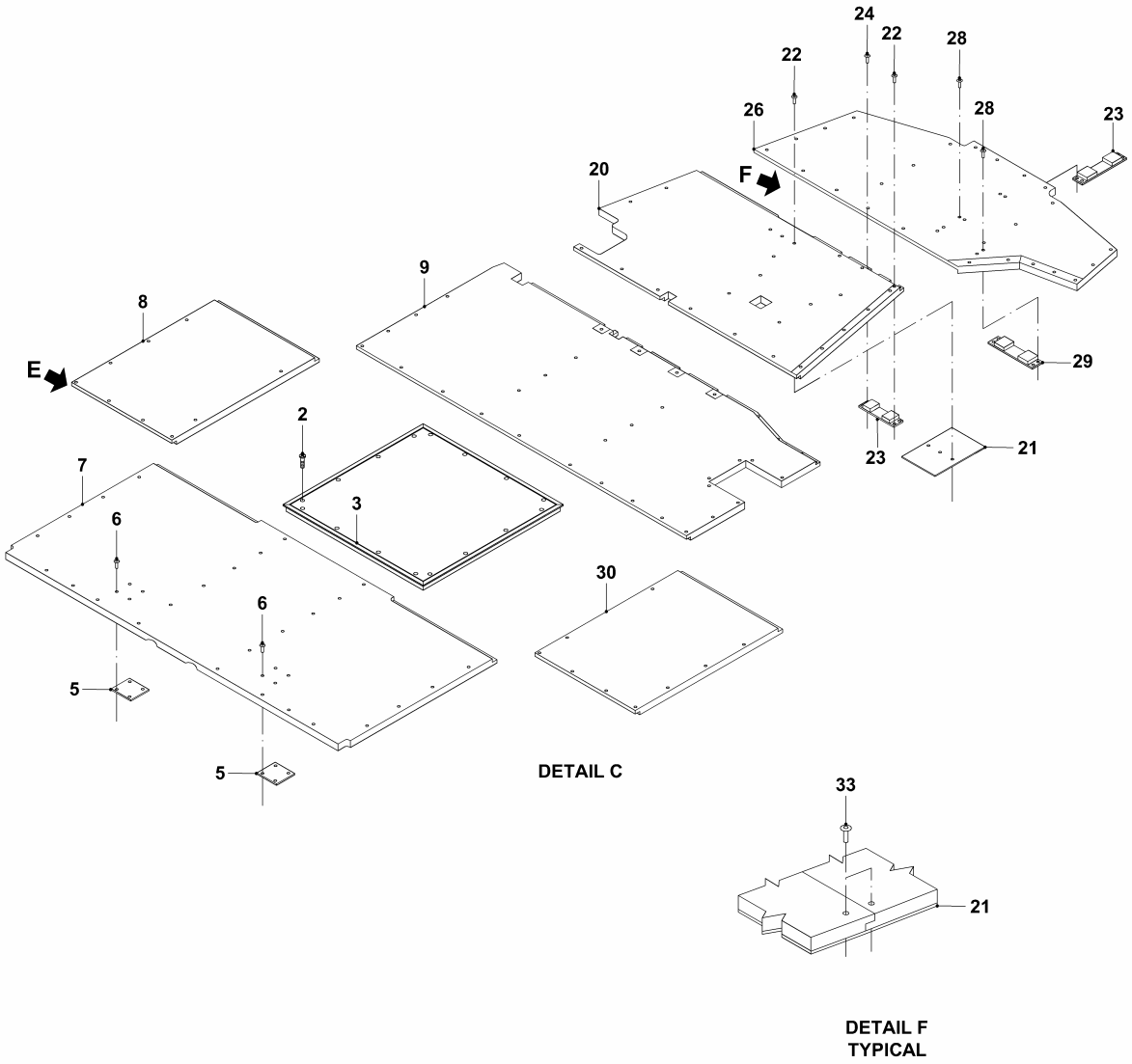

Figure 2-51 Floor Assy (Sheet 3 of 4)

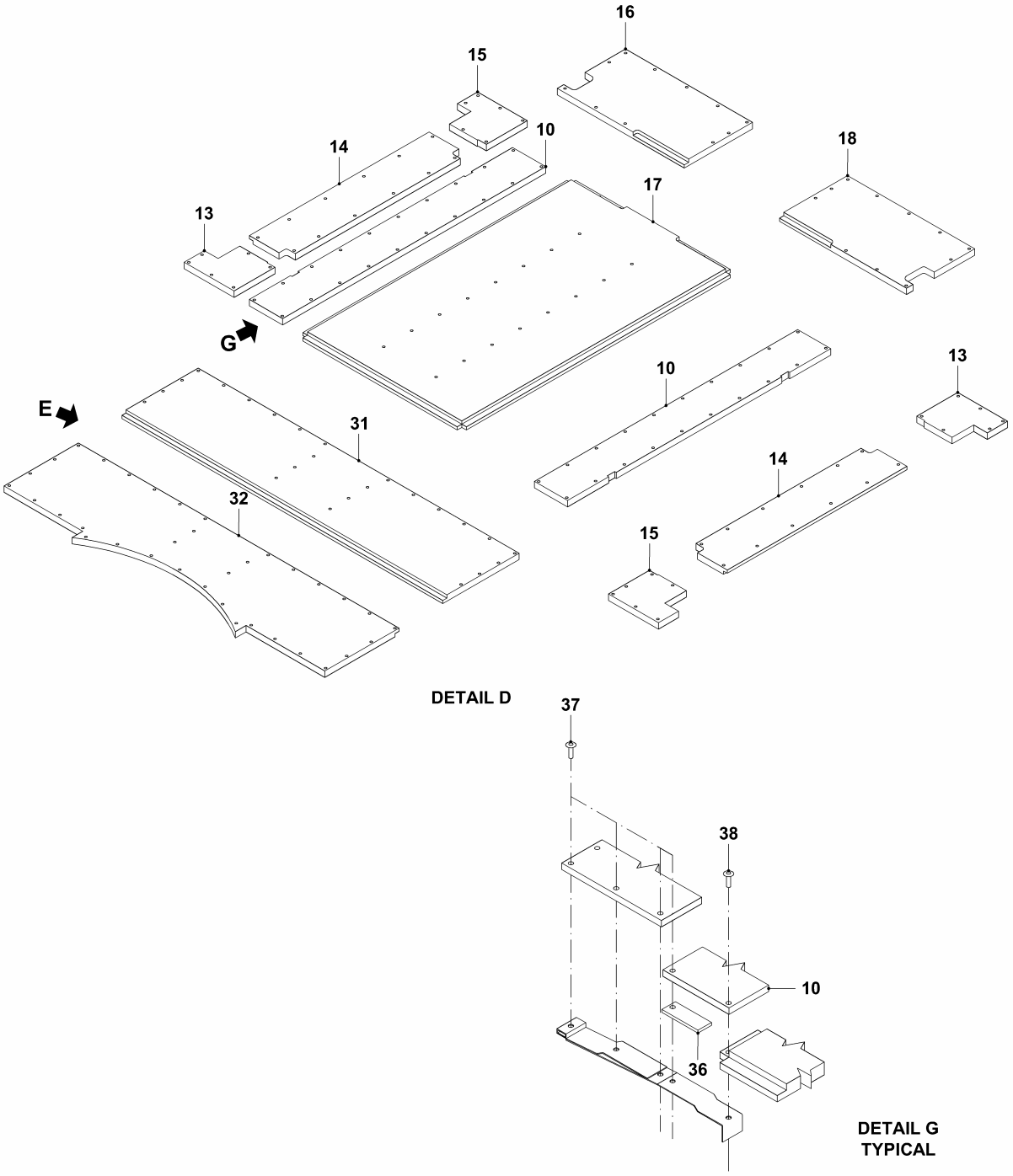

Figure 2-51 Floor Assy (Sheet 4 of 4)

Floor Assy (Fig. 2-51)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-051-	R12910100	R12910100	A0185	FLOOR ASSY		EA	1
1	R12910900	R12910900	A0185	.HATCH AND TRAP		EA	2
2	R12910913	5/16-18 UNCx1-3/4 ANSI B18.6.3a2S	Z9009	..SCREW, MACHINE, FLAT - ATT.PT CTSK HD CROSS REC - 5/16-18 UNCx1-3/4 ANSI B18.6.3		EA	16
3	R12910901	R12910901	A0185	..TRAPDOOR ASSY - SEE FIG. 2-52 FOR DETAIL		EA	1
4	R12910106	R12910106	A0185	.PANEL		EA	2
5	R12910127	R12910127	A0185	..PLATE		EA	2
6	R129101061	0.19x0.98	Z9009	..RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	8
7	R12910126	R12910126	A0185	..PANEL		EA	1
8	R12910105	R12910105	A0185	.PANEL		EA	2
9	R12910103	R12910103	A0185	.PANEL		EA	2
10	R12910117	R12910117	A0185	.PANEL		EA	4
11	R12910112	R12910112	A0185	.PANEL		EA	1
12	R12910111	R12910111	A0185	.PANEL		EA	1
13	R12910116	R12910116	A0185	.PANEL		EA	4
14	R12910109	R12910109	A0185	.PANEL		EA	4
15	R12910118	R12910118	A0185	.PANEL		EA	4
16	R12910108	R12910108	A0185	.PANEL		EA	2
17	R12910110	R12910110	A0185	.PANEL		EA	2
18	R12910107	R12910107	A0185	.PANEL		EA	2
19	R12910102	R12910102	A0185	.PANEL		EA	2
20	R129101020	R129101020	A0185	..PANEL		EA	1
21	R12910120	R12910120	A0185	..PLATE		EA	1
22	R129101021	0.19x0.98	Z9009	..RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	7
23	R12910124	R12910124	A0185	..SUPPORT		EA	1
24	R129101022	0.19x0.63	Z9009	..RIVET, TAC-0.19x0.63 -ATT.PT		EA	2
25	R12910101	R12910101	A0185	.PANEL		EA	2
26	R129101010	R129101010	A0185	..PANEL		EA	1
27				DELETED			
28	R129101011	0.19x0.98	Z9009	..RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	8
29	R12910123	R12910123	A0185	..SUPPORT		EA	1
30	R12910104	R12910104	A0185	.PANEL		EA	2
31	R12910115	R12910115	A0185	.PANEL		EA	1
32	R12910114	R12910114	A0185	.PANEL		EA	1
33	R129101003	0.19x0.98	Z9009	.RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	70
34	R129101004	0.19x1.77	Z9009	.RIVET, TAC - 0.19x1.77 - ATT.PT		EA	370
35	R12910143	R12910143	A0185	.GASKET - THK 0.19 - 53.03 LB/FT			AR
36	R12910142	R12910142	A0185	.GASKET-THK 0.04			AR
37	R129101002	0.19x0.79	Z9009	.RIVET, TAC - 0.19x0.79 - ATT.PT		EA	20
38	R129101001	0.19x1.38	Z9009	.RIVET, TAC - 0.19x1.38 - ATT.PT		EA	45
39		ASTM B633 MCMASTER		HEX BOLT,5/8x3-1/2,STC 503,TYPE A		EA	12
40		STC 538-89		SPRING WASHER,18x4.8(0.7x0.2),STC 536-89		EA	12
41		UNI 4891		SAFETY WIRE, DIA 2.0 mm, UNI3213		AR	AR

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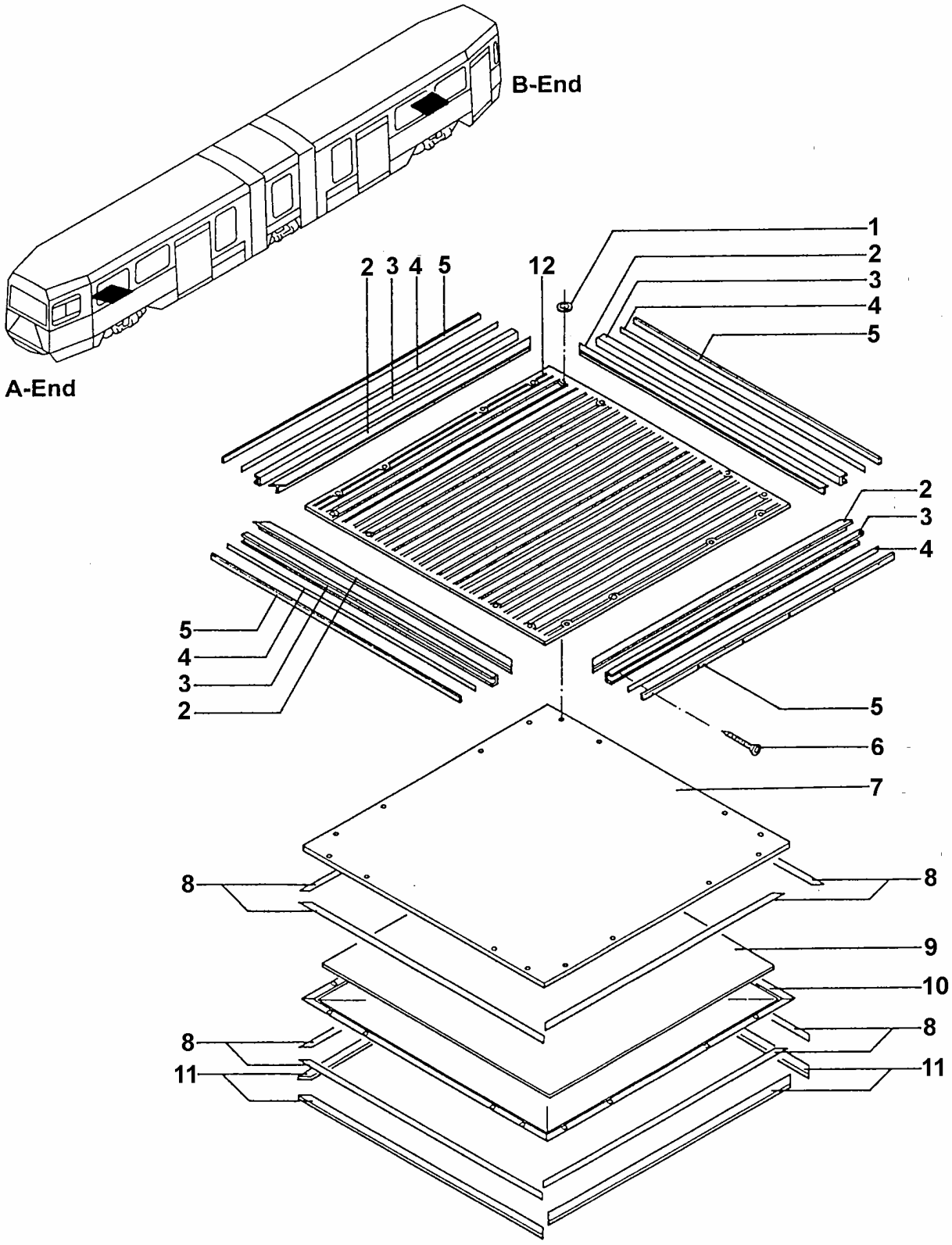

Figure 2-52 Trapdoor Assy

Trapdoor Assy (Fig. 2-52)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-052-	R12910901	R12910901	A0185	TRAPDOOR ASSY - SEE FIG. 2-51 FOR NHA		EA	2
1	R12910928	R12910928	A0185	.BUSHING, COLLARED		EA	16
2	R12910905	R12910905	A0185	.EXTRUSION		EA	4
3	R12910926	R12910926	A0185	.FRAME, C SECTION		EA	4
4	R12910906	R12910906	A0185	.ADHESIVE TAPE, DOUBLE			AR
5	R12910907	R12910907	A0185	.GASKET		EA	4
6	R129109011	R129109011	A0185	.SCREW, SPECIAL - ATT.PT		EA	24
7	R12910902	R12910902	A0185	.PANEL		EA	1
8	R12910922	R12910922	A0185	.ADHESIVE TAPE, DOUBLE			AR
9	R12910929	R12910929	A0185	.INSULATE		EA	1
10	R12910920	R12910920	A0185	.PAN		EA	1
11	R12910917	R12910917	A0185	.GASKET		EA	1
12	R12910927	R12910927	A0185	.FLOOR COVERING RUBBED		EA	1
13				HEX BOLT 5/8 x 3-1/2, STC 503, Type A		EA	24
14				SPRING WASHER 18 x 4.8 (0.7 x 0.2), STC 536-89		EA	24
15	R12252762			SAFETY WIRE DIA 2.0 mm, UNI3213, L=5000mm		EA	AR

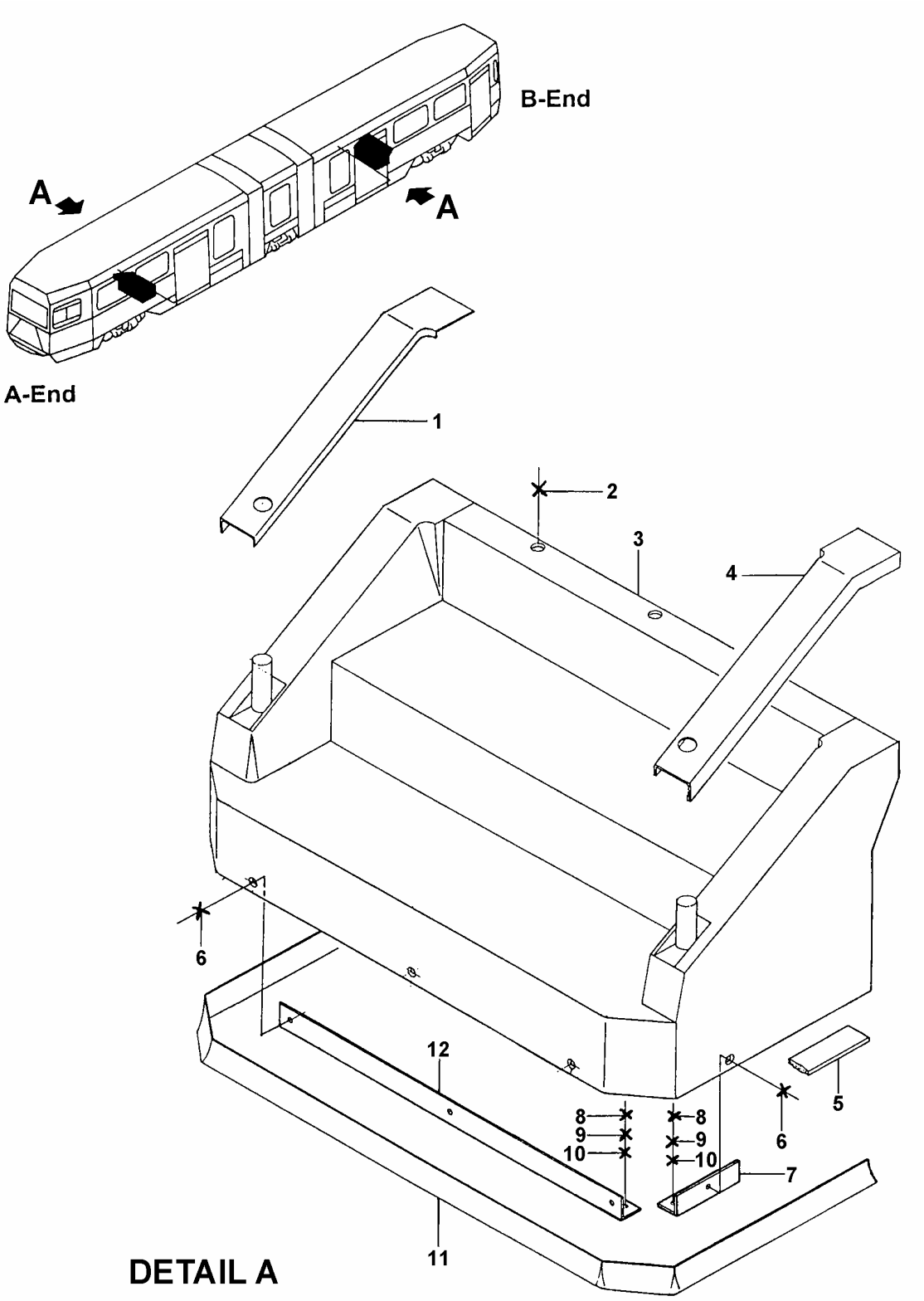

Figure 2-53 Inside Steps Installation

Inside Steps Installation (Fig. 2-53)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-053-	R12944000	R12944000	A0185	INSIDE STEPS INSTALLATION		EA	2
1	R12944006	R12944006	A0185	.COVERING		EA	
2	R129440511	1/4-20 UNCx1-1/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD -1/4-20 UNCx1-1/4 ANSI B18.6.3 - SSTL AISI 304		EA	3
3	R12944001	R12944001	A0185	.RAMP		EA	1
4	R12944005	R12944005	A0185	.COVERING		EA	1
5	R129440514	R129440514	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 1.18x0.08 - HARD 70 SHORE		FT	3.3
6	R129440515	¼-20 UNCx3 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD -1/4-20 UNCx3 ANSI B18.6.3 - SSTL AISI 304A		EA	5
7	R12944007	R12944007	A0185	.BRACKET		EA	2
8	R129440516	NO 8x1 ANSIB18.6.1eS	Z9009	.SCREW, WOOD, SLTD ROUND - ATT.PT HD - NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	9
9	R1294405110	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	9
10	R129440519	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	9
11	R12944011	P3575	F8861	.GASKET		FT	7.9
12	R12944008	R12944008	A0185	.BRACKET		EA	1

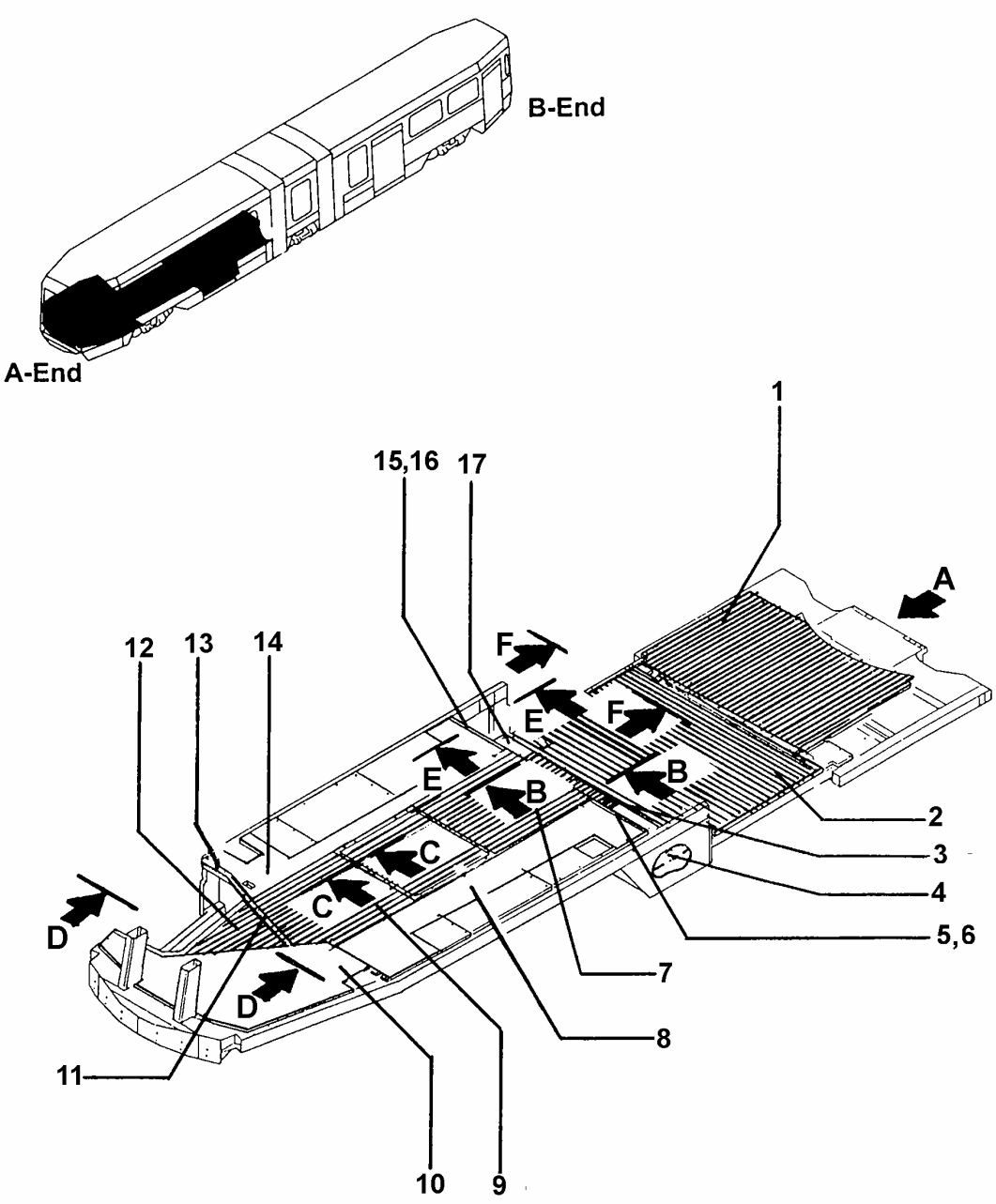

Figure 2-54 Rubber Floor Assy (Sheet 1 of 4)

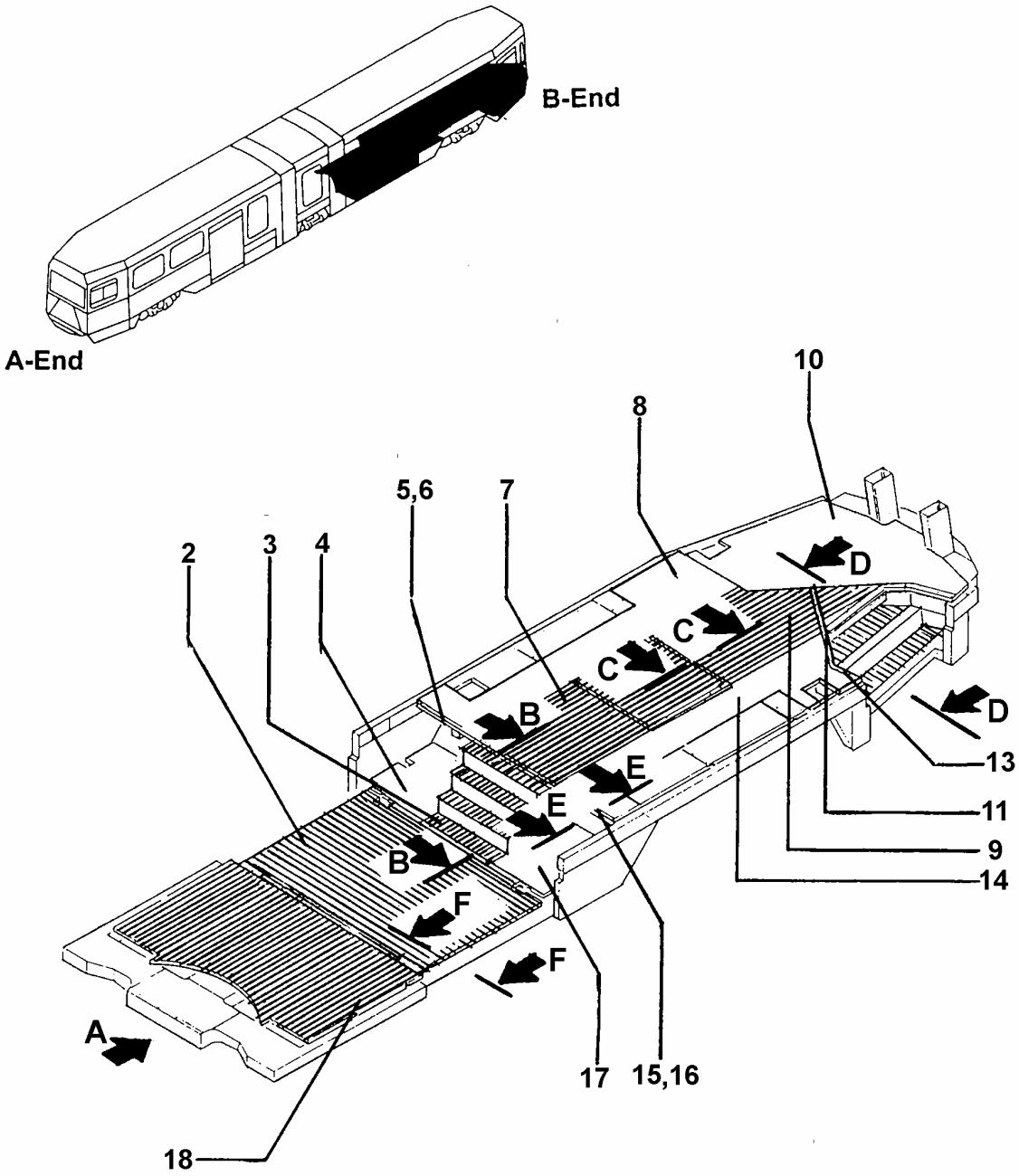

Figure 2-54 Rubber Floor Assy (Sheet 2 of 4)

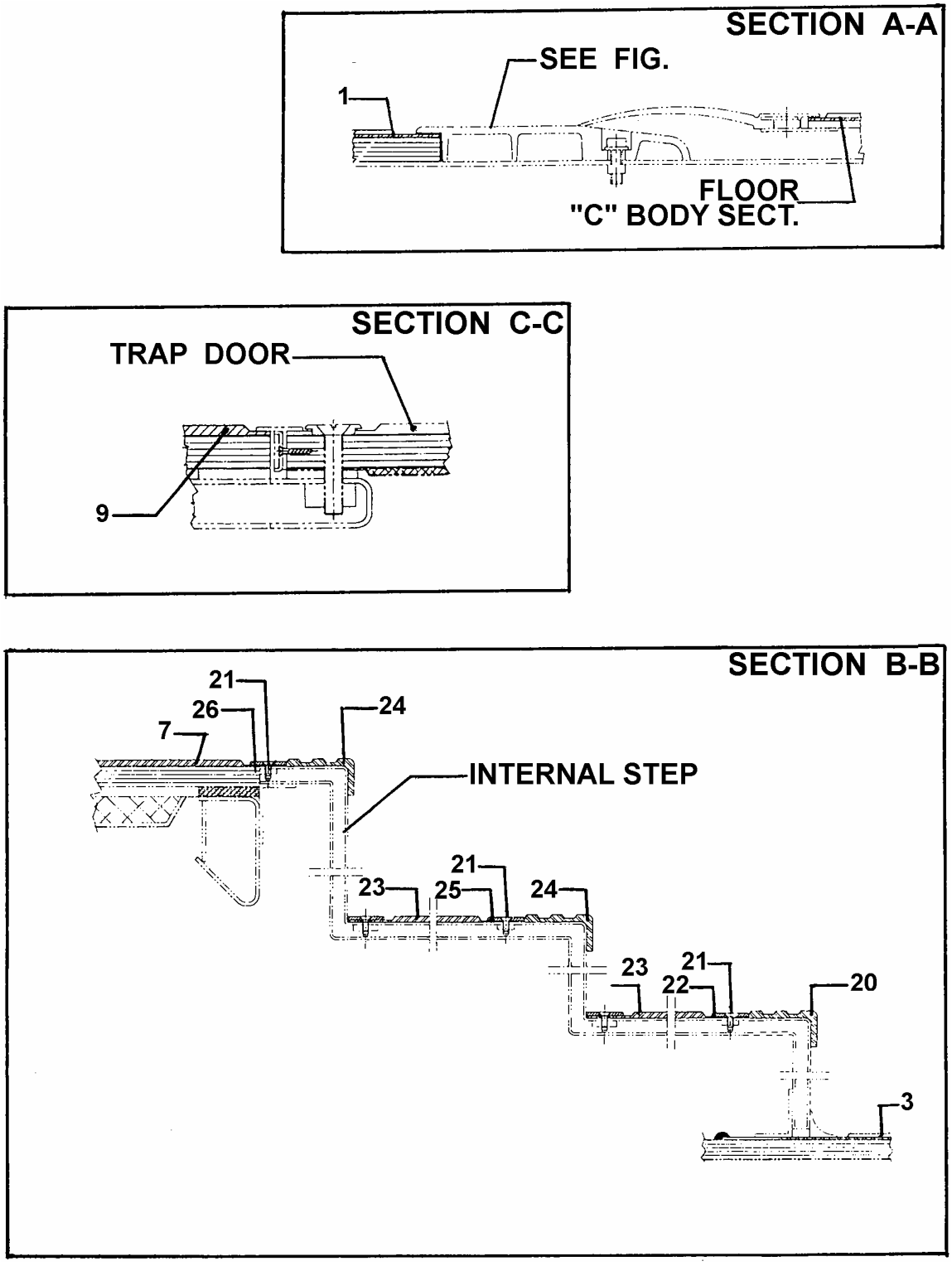

Figure 2-54 Rubber Floor Assy (Sheet 3 of 4)

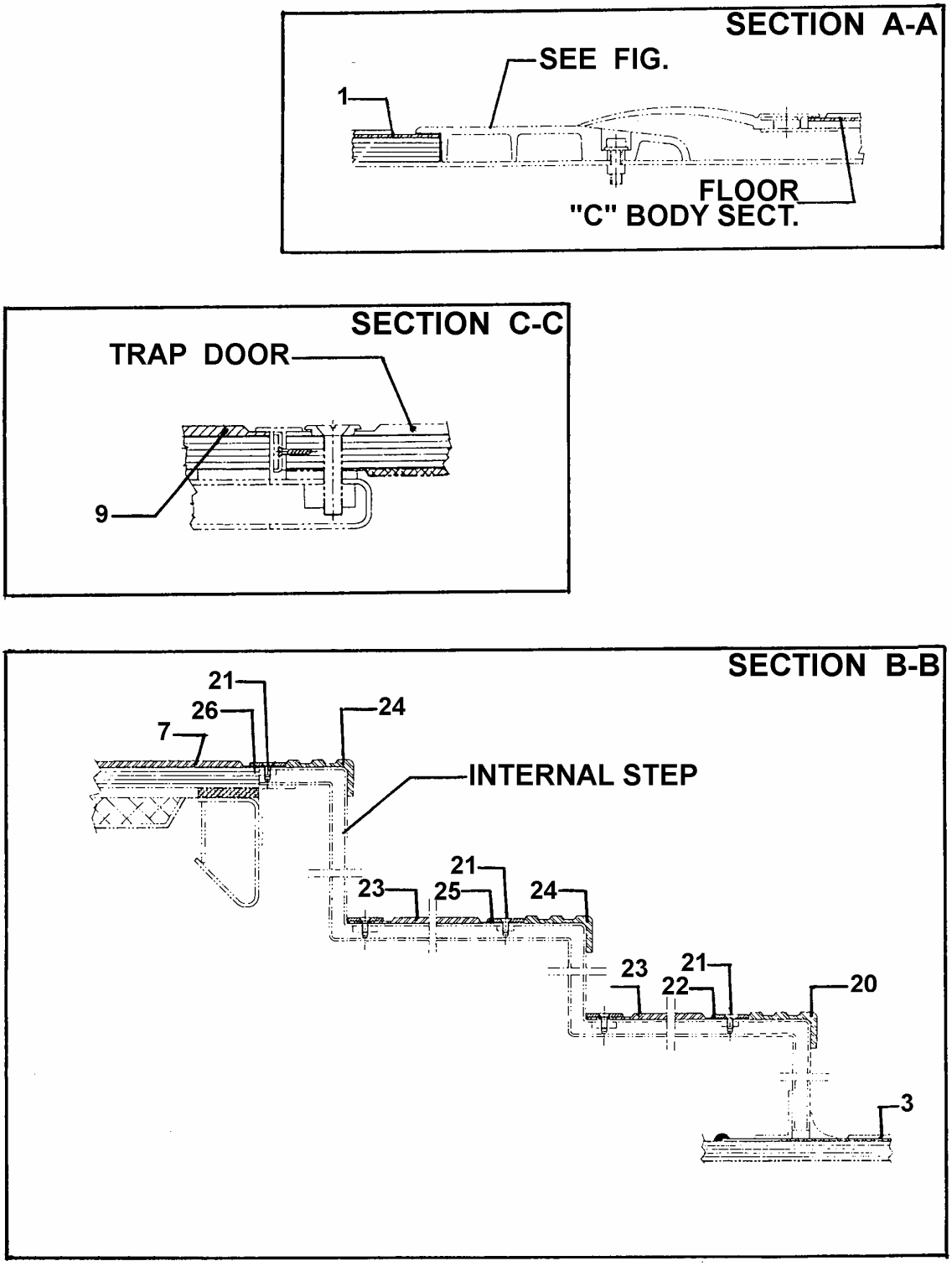

Figure 2-54 Rubber Floor Assy (Sheet 4 of 4)

Rubber Floor Assy (Fig. 2-54)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-054-	R12910250	R12910250	A0185	RUBBER FLOOR ASSY		EA	1
1	R12910261	R12910261	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	1
2	R12910260	R12910260	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	2
3	R12910259	R12910259	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	2
4	R12910254	R12910254	A0185	.FLOOR COVERING, SMOOTH RUBBER, GRAY		EA	2
5	R12910275	R12910275	A0185	.MOLDING		EA	2
6	R12910273	R12910273	A0185	.MOLDING		EA	2
7	R12910258	R12910258	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	2
8	R12910252	R12910252	A0185	.FLOOR COVERING, SMOOTH RUBBER, GRAY		EA	2
9	R12910257	R12910257	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	2
10	R12910251	R12910251	A0185	.FLOOR COVERING, SMOOTH RUBBER, GRAY		EA	2
11	R12910263	R12910263	A0185	.STANDEE, WHITE		EA	2
12	R12910256	R12910256	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	2
13	R12910264	R12910264	A0185	.STEP, YELLOW SILL		EA	2
14	R12910253	R12910253	A0185	.FLOOR COVERING, SMOOTH RUBBER, GRAY		EA	2
15	R12910265	R12910265	A0185	.MOLDING		EA	2
16	R12910266	R12910266	A0185	.MOLDING		EA	2
17	R12910255	R12910255	A0185	.FLOOR COVERING, SMOOTH RUBBER, GRAY		EA	2
18	R12910262	R12910262	A0185	.FLOOR COVERING, RIBBED RUBBER		EA	1
19	R129102501	NO 10-24 UNCx1/4 ANSI B18.6.4d4S	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1/4 ANSI B18.6.4 - SSTL AISI 304		EA	40
20	R12910291	R12910291	A0185	.STEP, YELLOW SILL		EA	2
21	R129102503	NO 10x1/2 STC 513-S	Z9009	.SCREW, FLAT CTSK HD - NO - ATT.PT 10x1/2 STC 513 - TYPE S STC 513		EA	68
22	R12910288	R12910288	A0185	.MOLDING		EA	2
23	R12910272	R12910272	A0185	.FLOOR COVERING STEP, RIBBED RUBBER		EA	4
24	R12910267	R12910267	A0185	.STEP, YELLOW SILL		EA	4
25	R12910287	R12910287	A0185	.MOLDING		EA	2
26	R12910268	R12910268	A0185	.MOLDING		EA	2
27	R129102502	NO 10x5/8 STC 513-S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT NO 10x5/8 STC 513 - TYPE S STC 513		EA	62
28	R12910282	R12910282	A0185	.MOLDING		EA	2
29	R12910270	R12910270	A0185	.FLOOR COVERING STEP, RIBBED RUBBER		EA	2
30	R12910269	R12910269	A0185	.STEP, YELLOW SILL		EA	2
31	R12910271	R12910271	A0185	.FLOOR COVERING STEP, RIBBED RUBBER		EA	2
32	R12910283	R12910283	A0185	.MOLDING		EA	2

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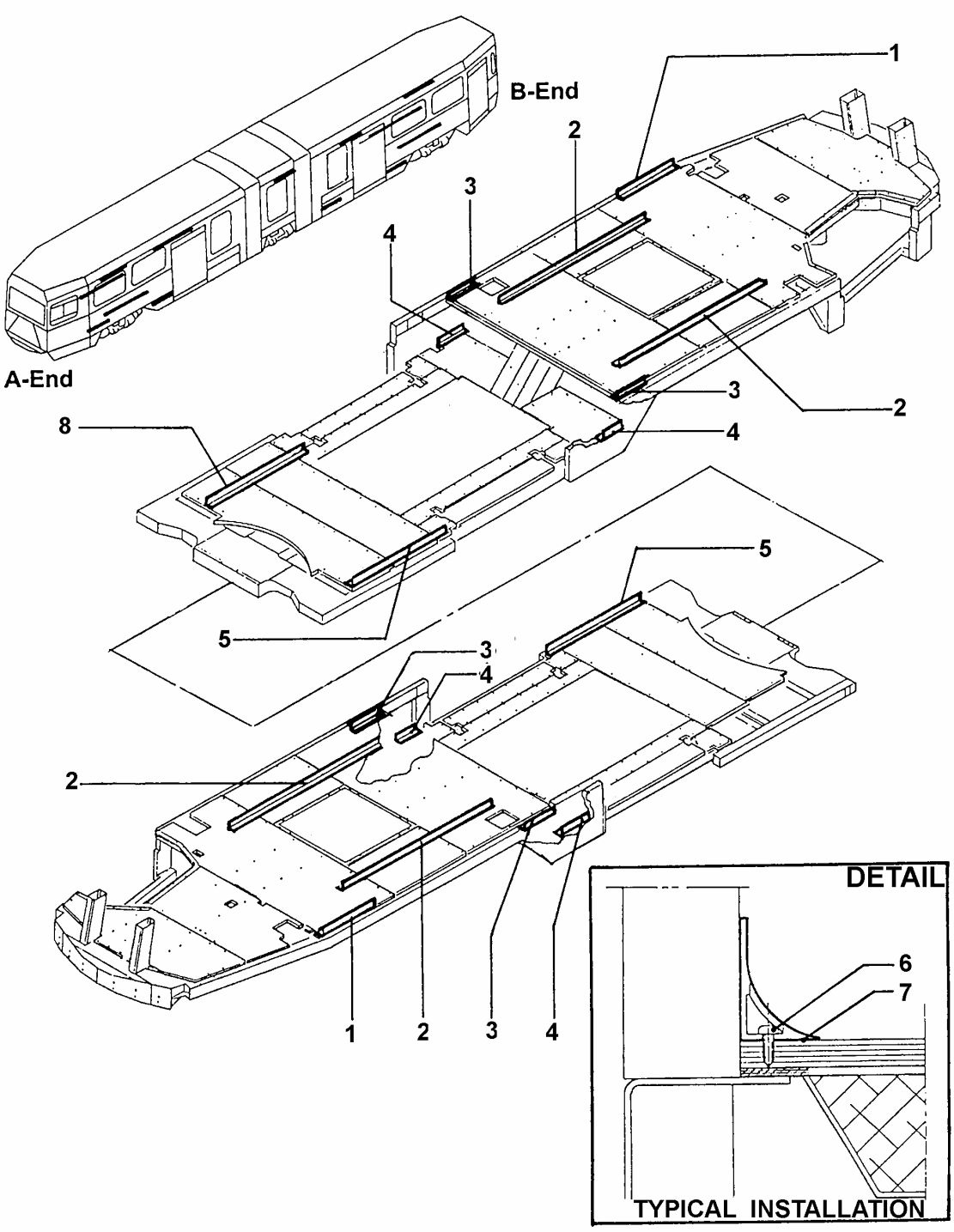

Figure 2-55 Floor, Moldings

Floor, Moldings (Fig. 2-55)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-055-	R12910150	R12910150	A0185	FLOOR, MOLDINGS		EA	1
1	R12910155	R12910155	A0185	.MOLDING		EA	2
2	R12910151	R12910151	A0185	.MOLDING		EA	4
3	R12910156	R12910156	A0185	.MOLDING		EA	4
4	R12910154	R12910154	A0185	.MOLDING		EA	4
5	R12910153	R12910153	A0185	.MOLDING		EA	2
6	R129101501	1/4-20 UNCx3/4 ANSI B18.6.4aS	Z9009	.SCREW, TAPPING TYPE AB, - ATT.PT ROUND HD REC -1/4-20 UNCx3/4 ANSI B18.6.4-SSTLAISI304		EA	106
7	R12910160	R12910160	A0185	.ADHESIVE TAPE, ZINC-O-FIX - 1.97 x 0.003		FT	54.0
8	R12910152	R12910152	A0185	.MOLDING		EA	1

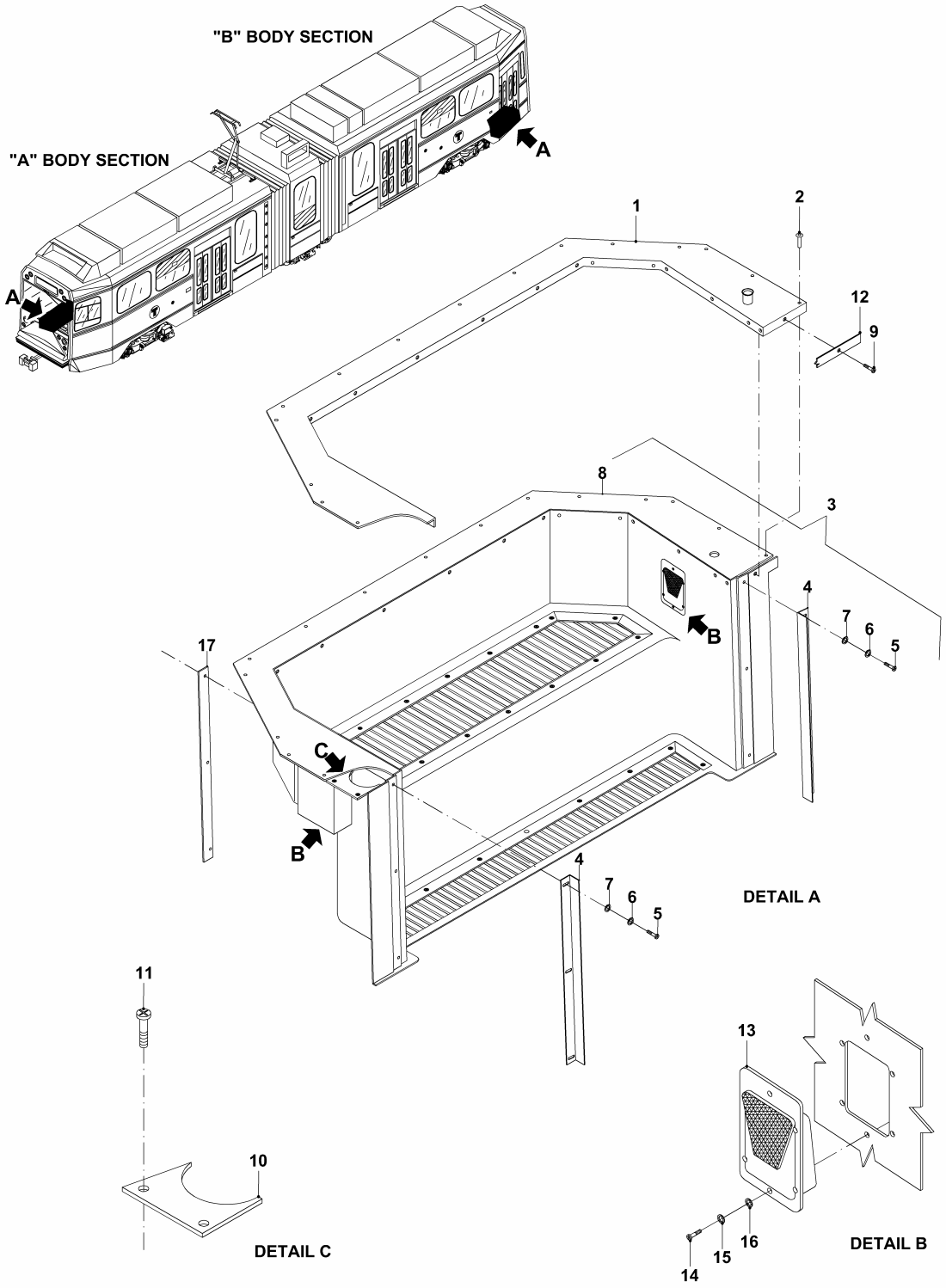

Figure 2-56 Step, Front Door Assy

Step, Front Door Assy (Fig. 2-56)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-056-	R12910800	R12910800	A0185	STEP, FRONT DOOR ASSY		EA	2
1	R12910875	R12910875	A0185	.FRAME		EA	1
2	R129108001	0.19x1.18TS	Z9009	.RIVET, TAC TS - 0.19x1.18 - ATT.PT		EA	15
3	R12910850	R12910850	A0185	.STEP ASSY, FRONT DOOR		EA	1
4	R12910860	R12910860	A0185	..ANGLE		EA	2
5	R129108501	1/4x3/4 STC 510-S	Z9009	..SCREW, CROSS REC PAN HD - ATT.PT - 1/4x3/4 STC 510 - TYPE S STC 510		EA	6
6	R129108502	1/4STC514-S	Z9009	..WASHER, PLAIN-1/4 STC 514 -ATT.PT -TYPES STC 514		EA	6
7	R129108503	1/4 STC 515-S	Z9009	..WASHER, HEL SPRING-1/4 -ATT.PT STC 515-TYPES STC 515		EA	6
8	R12910851	R12910851	A0185	..STEP		EA	1
9	R129108002	NO 10x5/8 STC 513-S	Z9009	.SCREW, FLAT REC CTSK HD - - ATT.PT NO 10x5/8 STC 513 - TYPE S STC 513		EA	20
10	R12910865	R12910865	A0185	.PLATE		EA	1
11	R129108006	NO 8x5/8 ANSI B18.6.1d	Z9009	.SCREW, WOOD, SLTD FLAT - ATT.PT CTSK HD - NO 8x5/8 ANSI B18.6.1		EA	2
12	R12910867	R12910867	A0185	.RUBBER, SELF ADHESIVE - 0.98x0.08 - NEOPRENE, HARD SHORE 70		FT	16.25
13	R12495820	109501001	B0006	.FLOOR LIGHT - SEE FIG. 6-1 FOR NHA - 6-27 FOR DETAIL		EA	2
14	R129108003	NO 10x5/8 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT NO 10x5/8 STC 510 - TYPE S STC 510		EA	8
15	R129108004	NO 10 STC 514-S	Z9009	.WASHER, PLAIN - NO 10 STC - ATT.PT 514-TYPES STC 514		EA	8
16	R129108005	NO 10 STC 515-S	Z9009	.WASHER, HEL SPRING-NO 10 -ATT.PT STC 515-TYPES STC 515		EA	8
17	R12910870	R12910870	A0185	.RUBBER, SELF ADHESIVE - 0.59x0.04 - NEOPRENE, HARD SHORE 70		FT	3.4

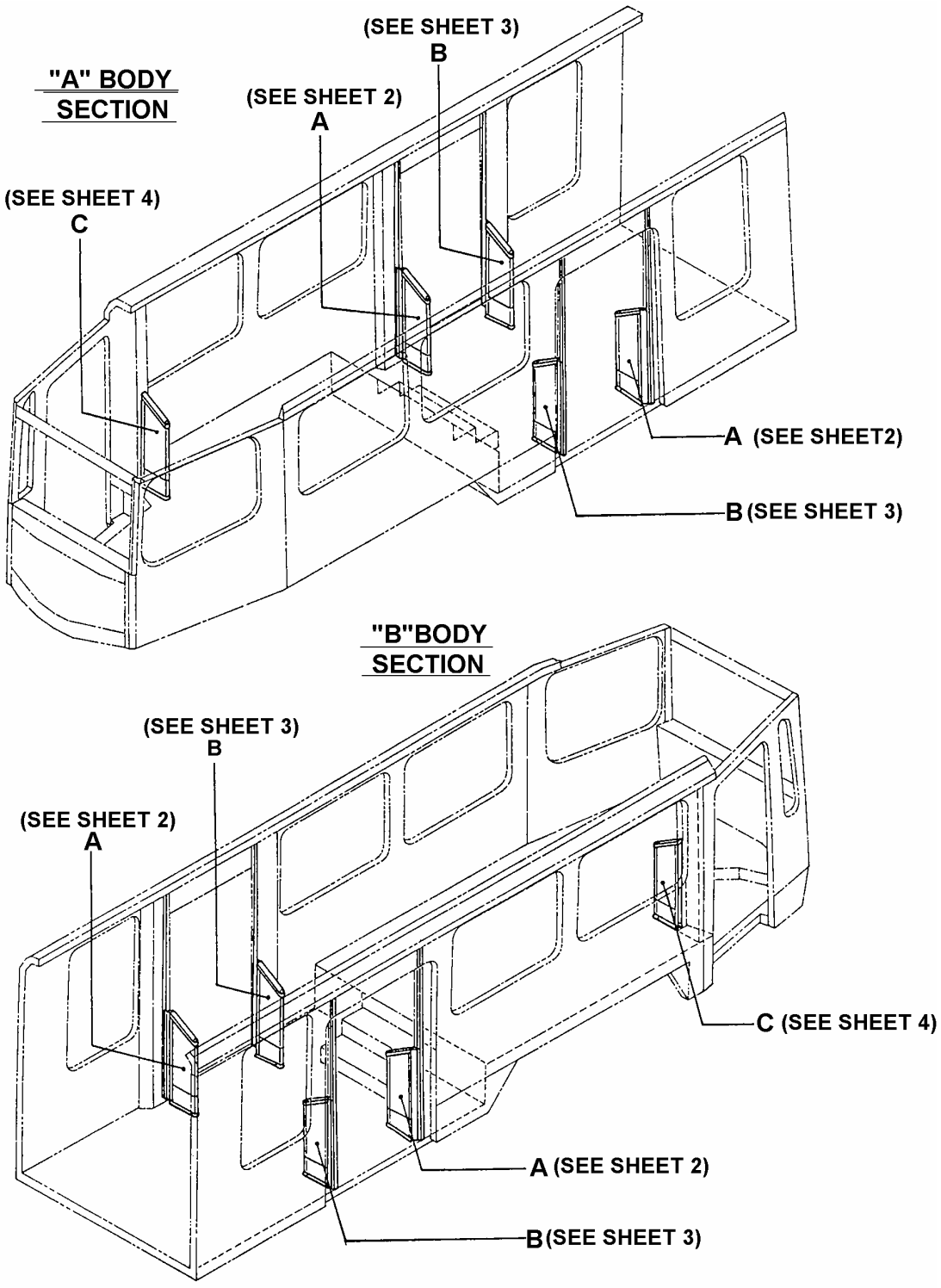

Figure 2-57 Entrance Walls Installation (Sheet 1 of 5)

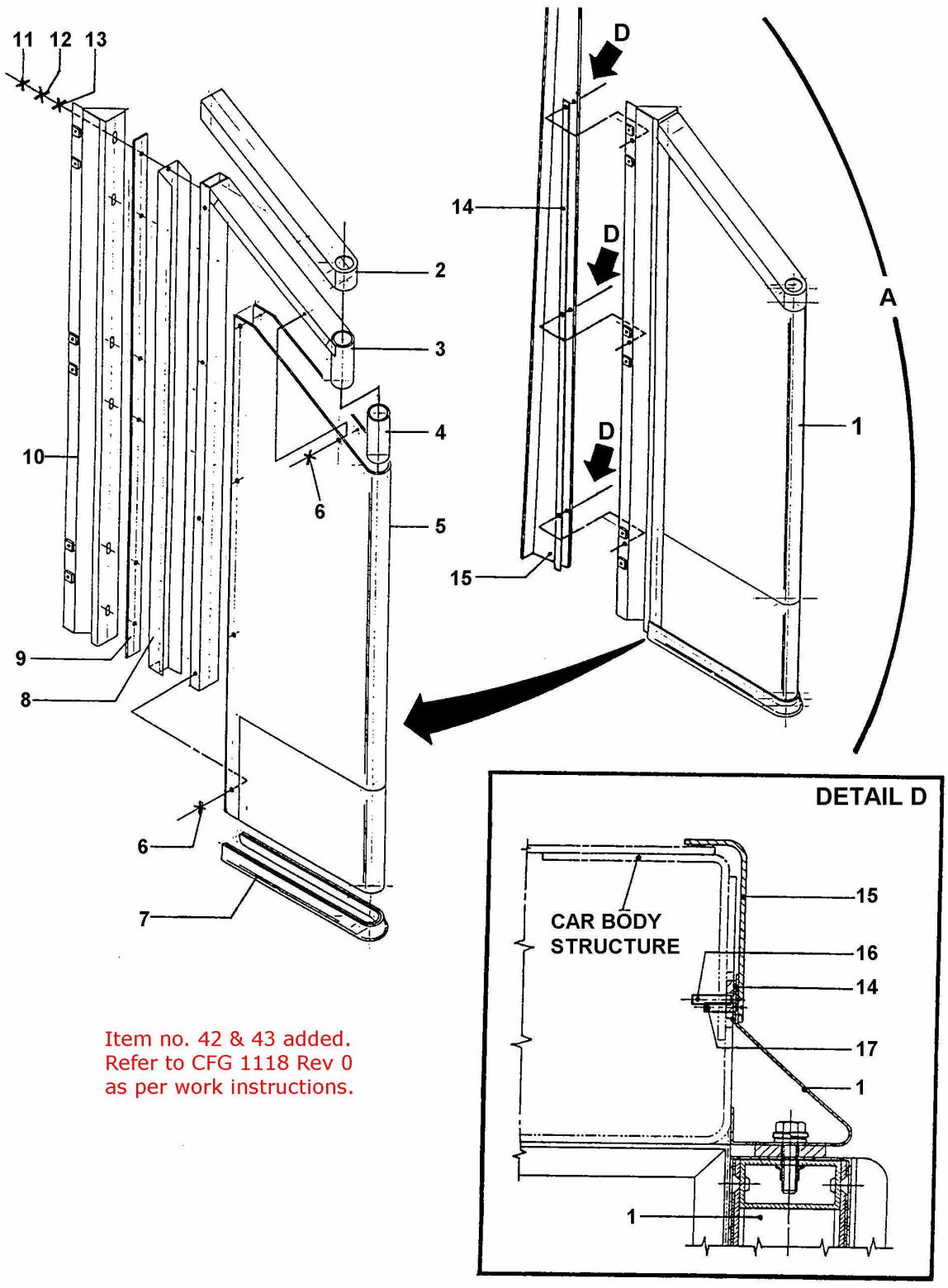

Figure 2-57 Entrance Walls Installation (Sheet 2 of 5)

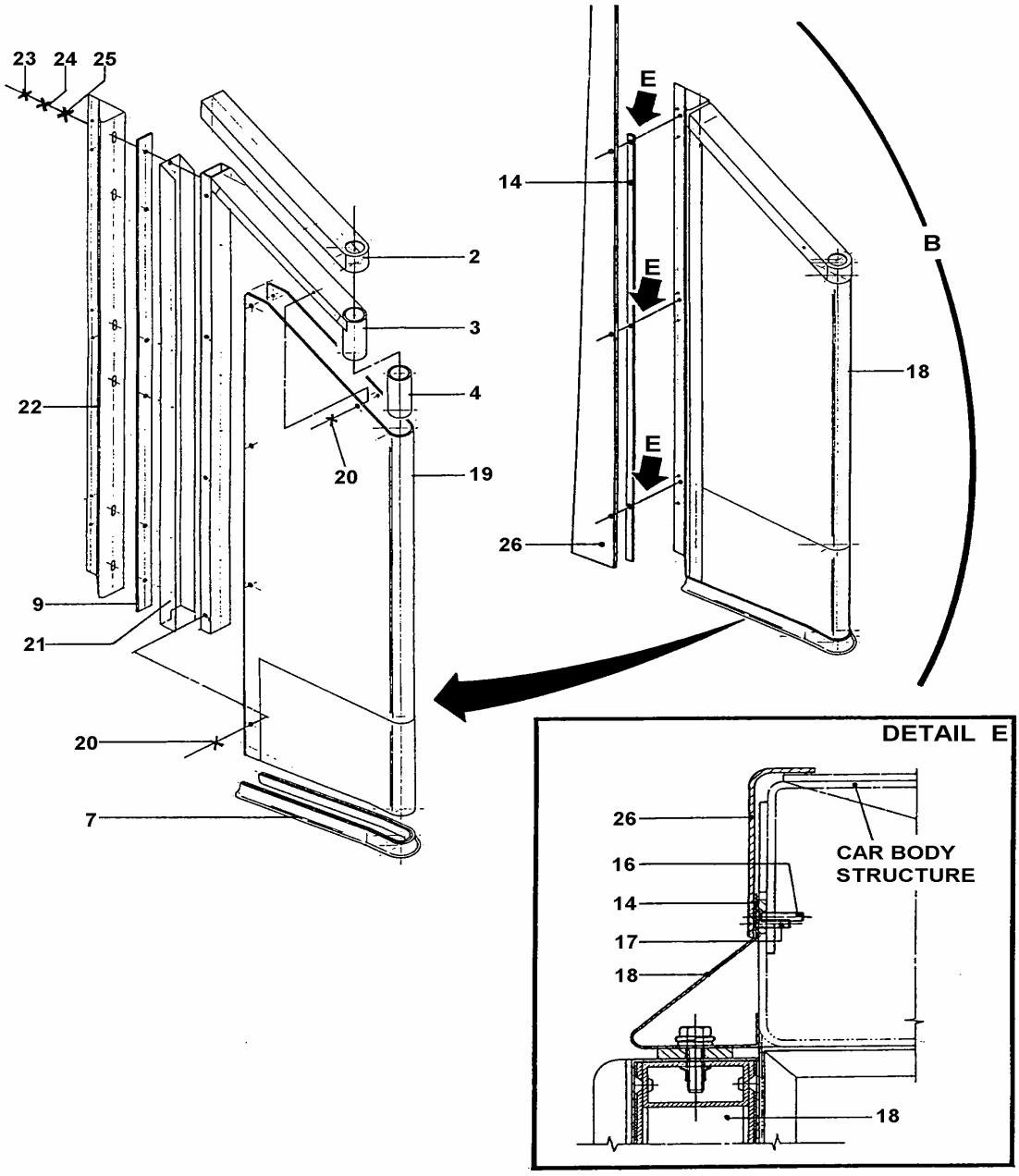

Figure 2-57 Entrance Walls Installation (Sheet 3 of 5)

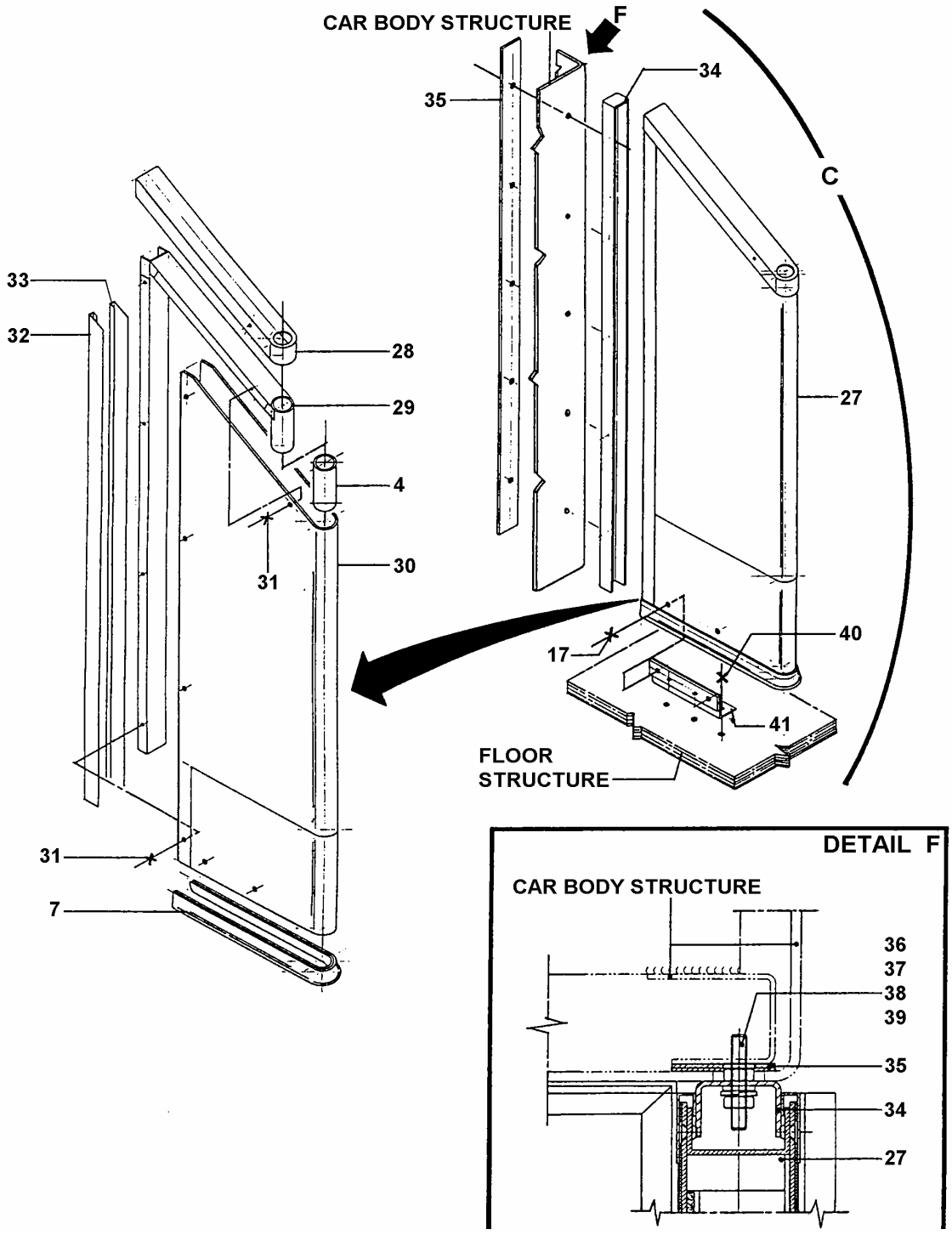

Figure 2-57 Entrance Walls Installation (Sheet 4 of 5)

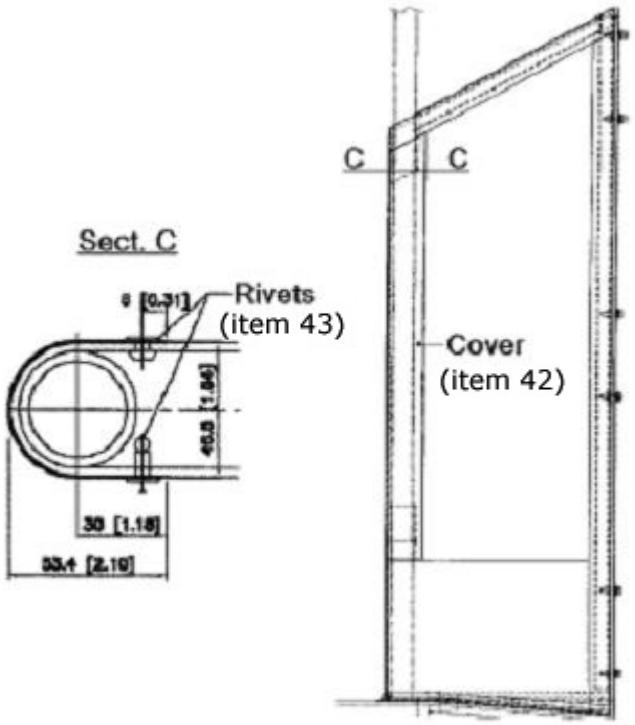

Figure 2-57 Entrance Walls Installation (Figure from CFG 1118) (Sheet 5 of 5)

NOTE: Item 42 & 43 added as per CFG 1118

Entrance Walls Installation (Fig. 2-57)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-057-	R12990500	R12990500	A0185	ENTRANCE WALLS INSTALLATION		EA	1
1	R12990502	R12990502	A0185	.WALL		EA	4
2	R12990525	R12990525	A0185	..HANDRAIL		EA	2
3	R12990532	R12990532	A0185	..FRAME		EA	2
4	R12990540	R12990540	A0185	..PIPE		EA	3
5	R12990531	R12990531	A0185	..PANEL		EA	1
6	R129905291	TAP.K 54 BS	Z9009	..RIVET, BLIND, POP - TAP.K 54 - ATT.PT BS - Al Mg 3.5		EA	10
7	R12990542	R12990542	A0185	..GASKET		EA	1
8	R12990534	R12990534	A0185	..FRAME		EA	1
9	R12990536	R12990536	A0185	..PLATE		EA	2
10	R12990537	R12990537	A0185	..FRAME		EA	1
11	R129905292	1/4-20 UNCx1 ANSI B18.2.1cS	Z9009	..SCREW, HEX -1/4-20 UNCx1 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	6
12	R129905294	1/4 ANSI B27.1 -S	Z9009	..WASHER, HEL SPRING-1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
13	R129905293	1/4 B ANSI B27.2-S	Z9009	..WASHER, PLAIN TYPE B-1/4 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	6
14	R129905978	R129905978	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 42.13x0.59x0.08 - HARD70 SHORE		EA	8
15	R12990511	R12990511	A0185	.FRAME		EA	4
16	R129905974	NO 8-32 UNCx3/4 ANSI B18.6.4dS	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx3/4 ANSI B18.6.4 - SSTL AISI 304A		EA	48
17	R129905977	NO 8-32 UNCx5/8 ANSI B18.6.4dS	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	52
18	R12990503	R12990503	A0185	.WALL		EA	4
19	R12990539	R12990539	A0185	..PANEL		EA	1
20	R129905281	TAP.K 54 BS	Z9009	..RIVET, BLIND, POP - TAP.K 54 - ATT.PT BS - Al Mg 3.5		EA	10
21	R12990535	R12990535	A0185	..FRAME		EA	1
22	R12990538	R12990538	A0185	..FRAME		EA	1
23	R129905282	1/4-20 UNCx1 ANSI B18.2.1cS	Z9009	..SCREW, HEX -1/4-20 UNCx1 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	6
24	R129905284	1/4 ANSI B27.1 -S	Z9009	..WASHER, HEL SPRING-1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
25	R129905283	1/4 ANSI B27.2-S	Z9009	..WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	6
26	R12990512	R12990512	A0185	.FRAME		EA	4
27	R12990501	R12990501	A0185	.WALL		EA	2
28	R12990541	R12990541	A0185	..HANDRAIL		EA	1
29	R12990522	R12990522	A0185	..FRAME		EA	1
30	R12990521	R12990521	A0185	..PANEL		EA	1
31	R129905301	TAP.K 54 BS	Z9009	..RIVET, BLIND, POP - TAP.K 54 - ATT.PT BS - Al Mg 3.5		EA	10
32	R12990523	R12990523	A0185	..FRAME		EA	1
33	R12990524	R12990524	A0185	..FRAME		EA	1
34	R12990513	R12990513	A0185	.SHEET		EA	2
35	R12990596	R12990596	A0185	.GASKET		EA	2
36	R12990514	R12990514	A0185	.BAR, THREADED -1/4-20 UNC x - ATT.PT **1 K7 - SSTI AISI 304A**		EA	10

Entrance Walls Installation (Fig. 2-57)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-057- 37	R129905972	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	20
38	R129905973	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	10
39	R129905976	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	20
40	R129905975	NO 8x1 ANSI B18.6.1cS	Z9009	.SCREW, WOOD, ROUND HD - - ATT.PT NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	6
41	R12990510	R12990510	A0185	.BRACKET		EA	2
42	R12990553	R12990553	A0185	WINDSCREEN COVER			10
43			A0185	BLIND RIVET 3/16 x 1/2"			40

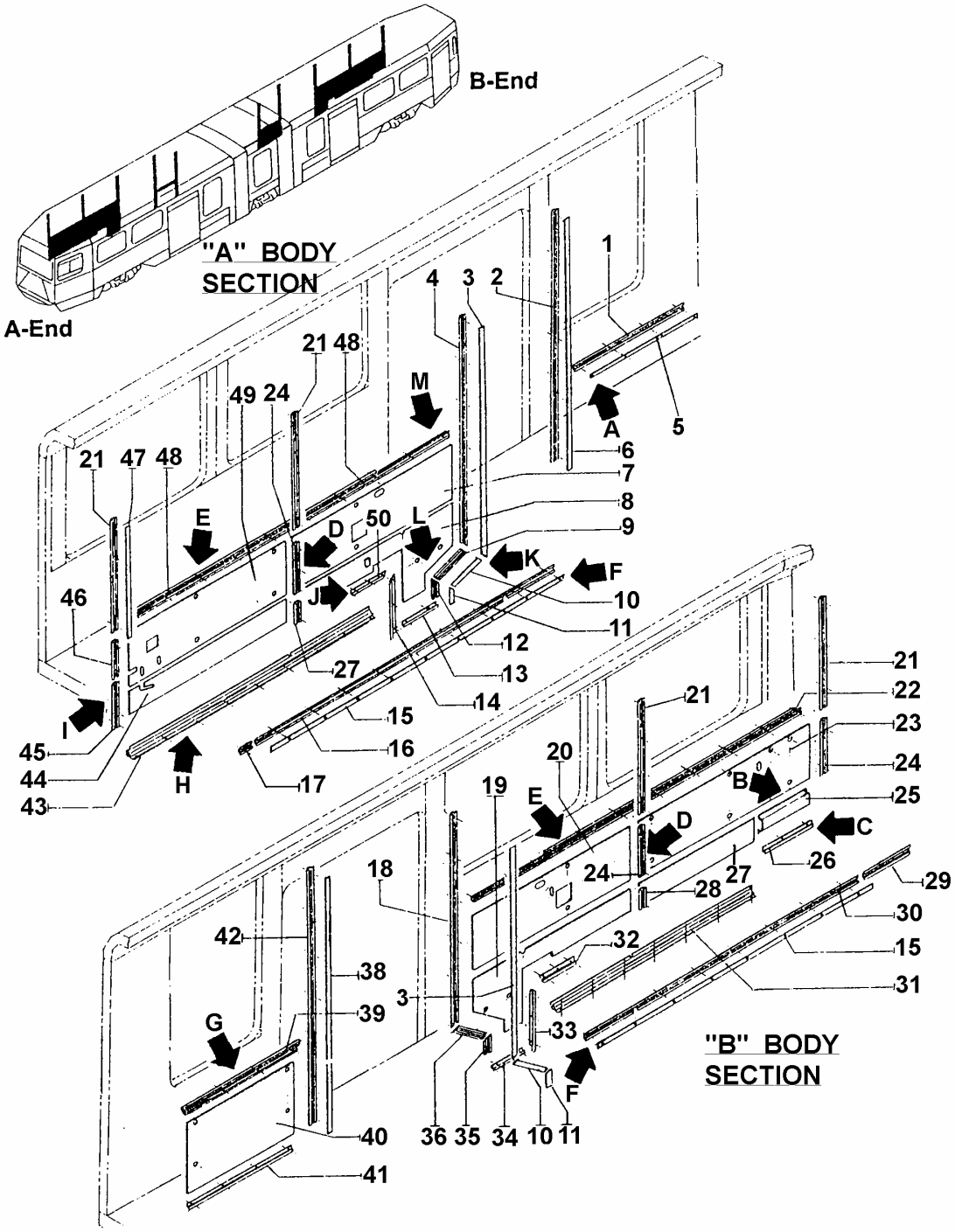

Figure 2-58 Inner Body Side Lining (Sheet 1 of 5)

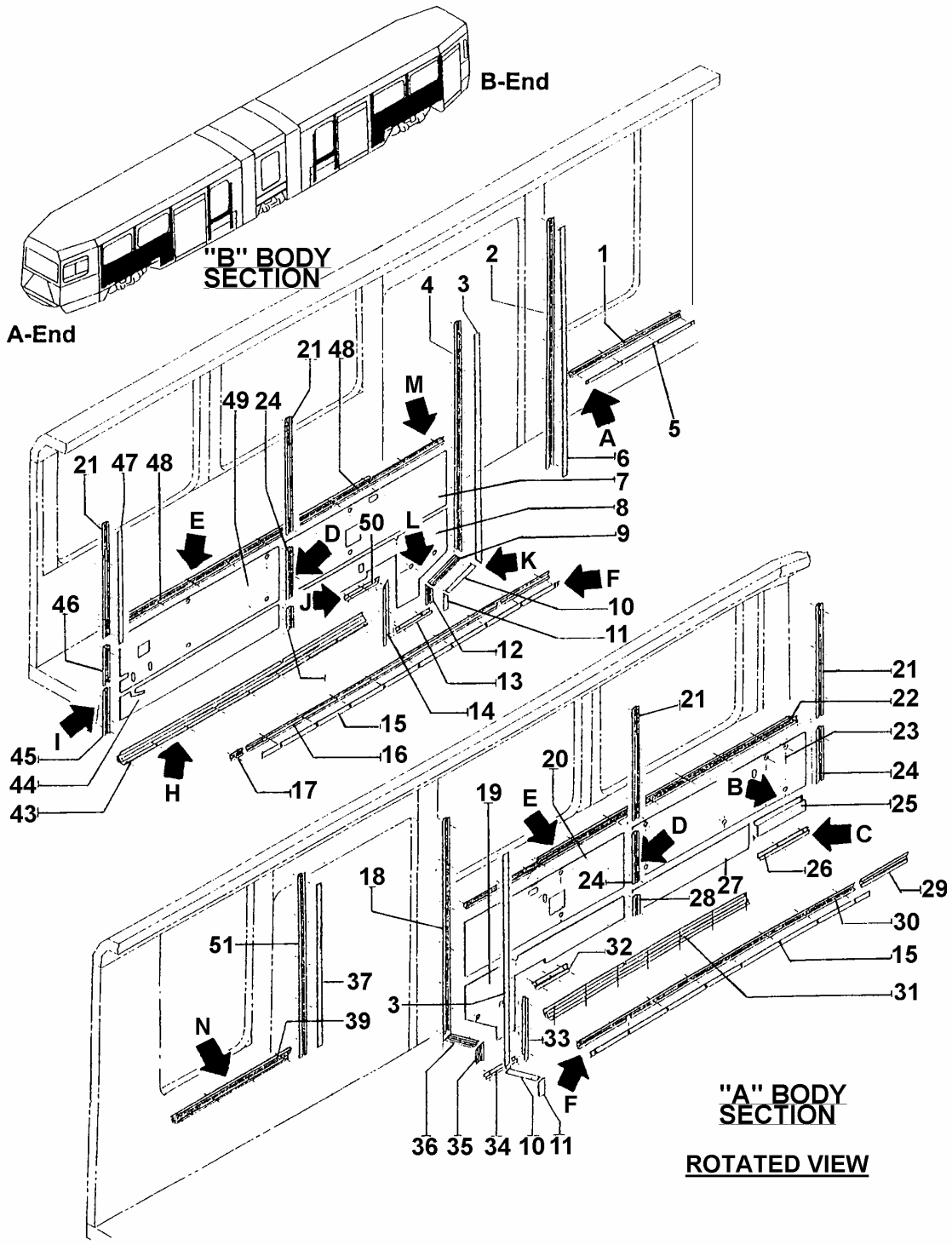

Figure 2-58 Inner Body Side Lining (Sheet 2 of 5)

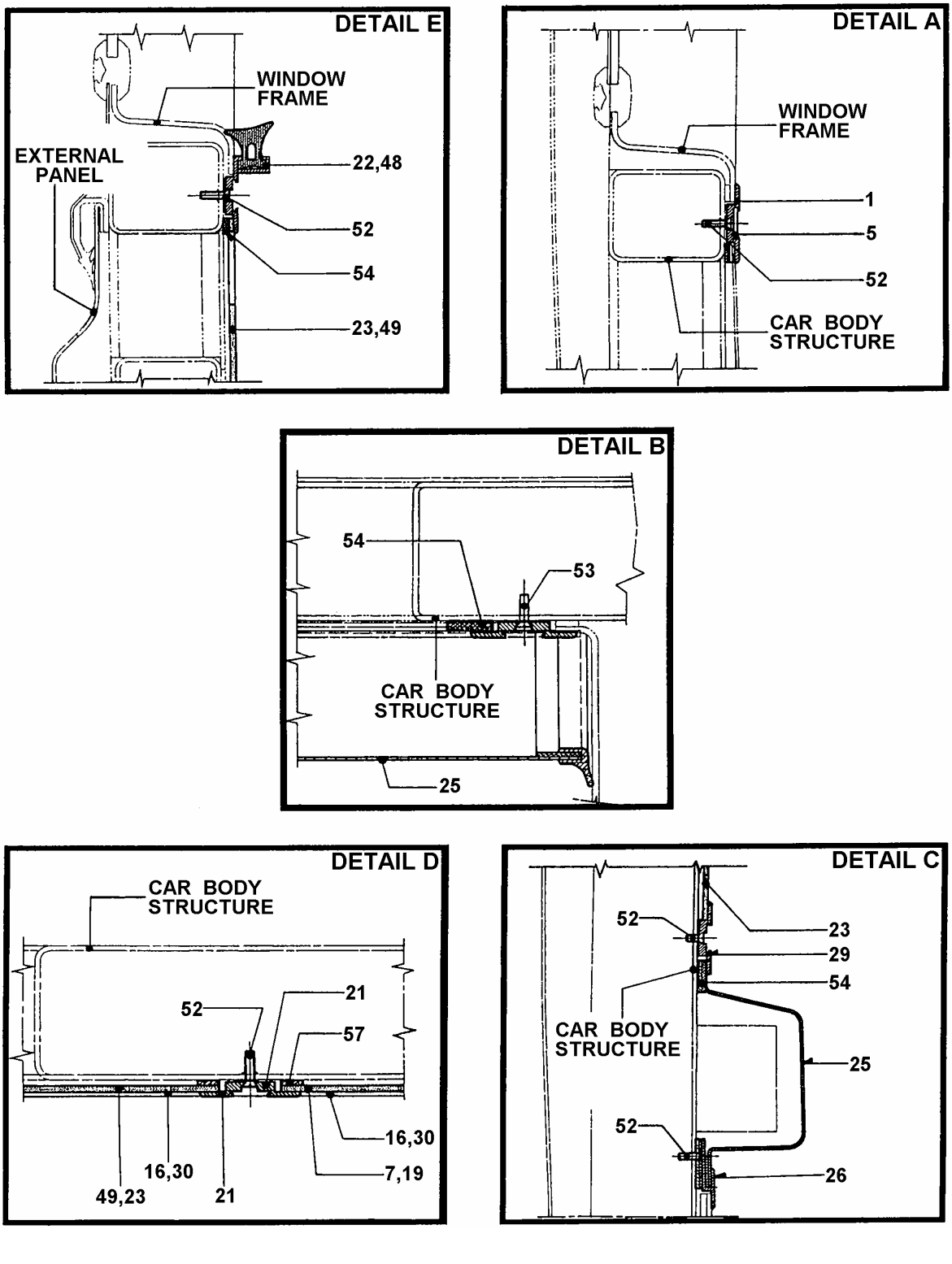

Figure 2-58 Inner Body Side Lining (Sheet 3 of 5)

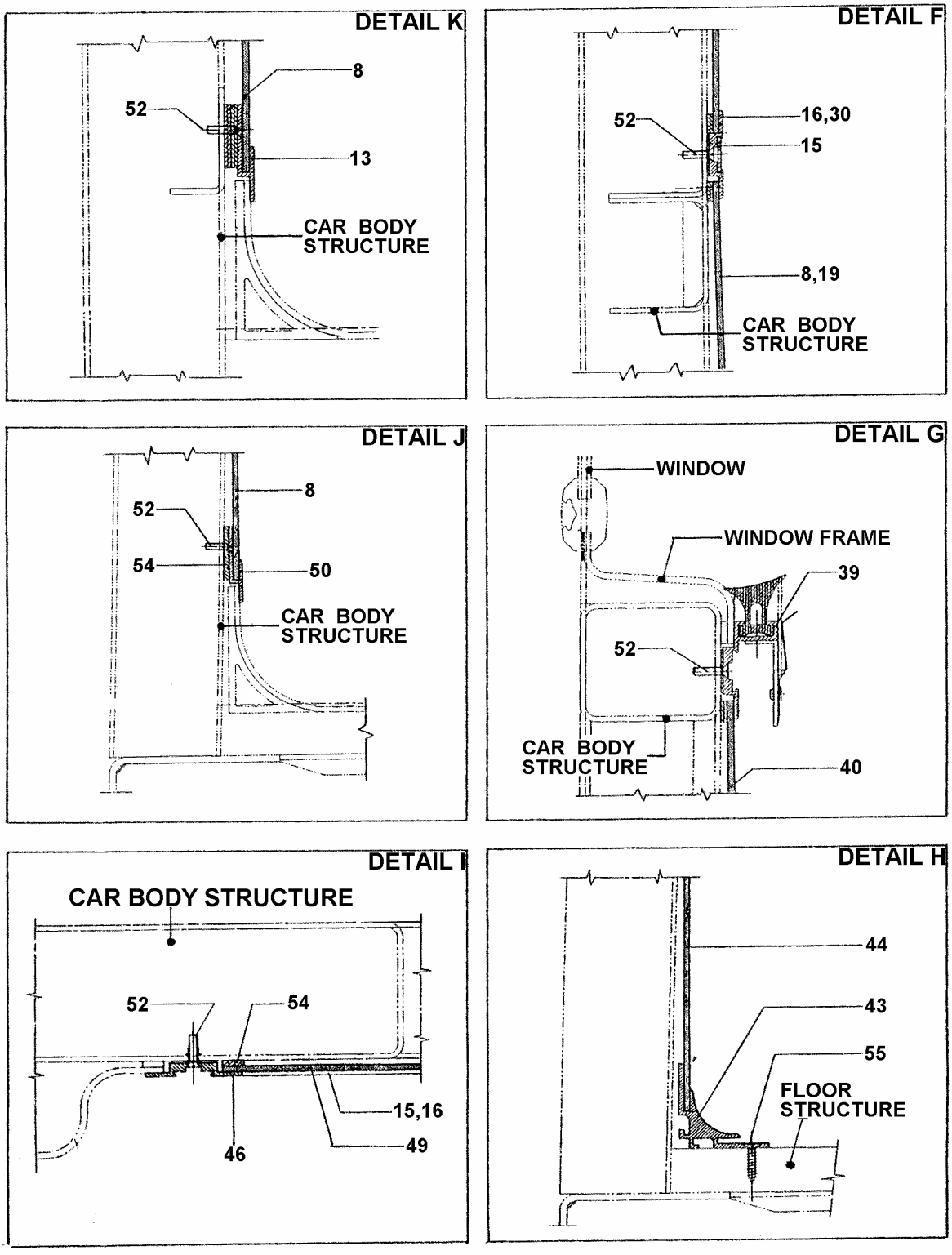

Figure 2-58 Inner Body Side Lining (Sheet 4 of 5)

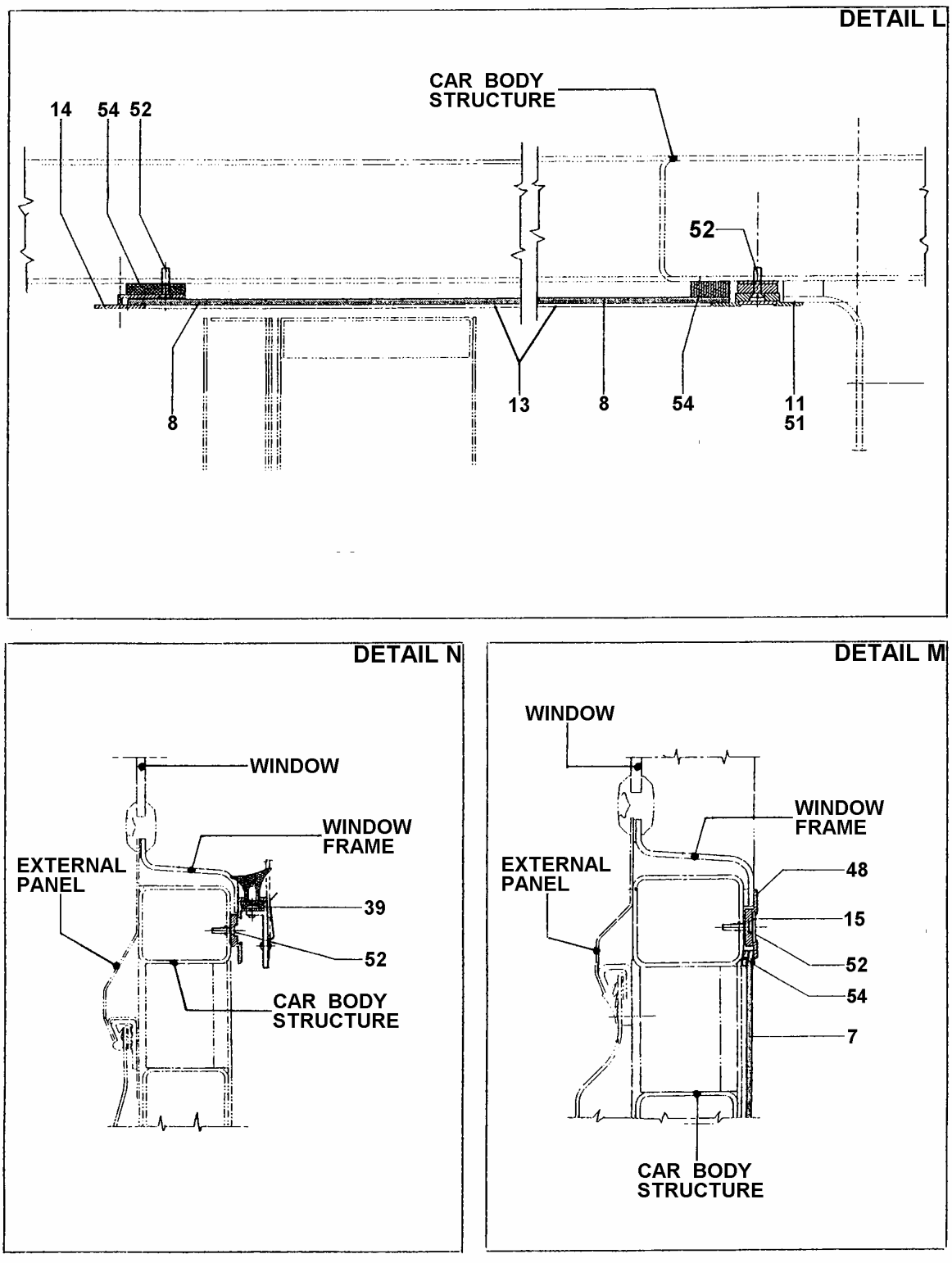

Figure 2-58 Inner Body Side Lining (Sheet 5 of 5)

Inner Body Side Lining (Fig. 2-58)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-058-	R12920501	R12920501	A0185	INNER BODY SIDE LINING		EA	1
1	R12920541	R12920541	A0185	.PROFILE WITH GASKET		EA	2
2	R12920528	R12920528	A0185	.PROFILE, VERTICAL		EA	2
3	R12920588	R12920588	A0185	.SCREW COVER, LG=6.69 FT		EA	4
4	R12920559	R12920559	A0185	.PROFILE, VERTICAL		EA	2
5	R12920587	R12920587	A0185	.SCREW COVER, LG=3.80 FT		EA	2
6	R12920584	R12920584	A0185	.SCREW COVER, LG=7.72 FT		EA	2
7	R12920517	R12920517	A0185	.PANEL, SIDE		EA	2
8	R12920519	R12920519	A0185	.PANEL, SIDE		EA	2
9	R12920560	R12920560	A0185	.PROFILE, VERTICAL		EA	2
10	R12920589	R12920589	A0185	.SCREW COVER, LG=1.32 FT		EA	4
11	R12920590	R12920590	A0185	.SCREW COVER, LG=0.70 FT		EA	4
12	R12920561	R12920561	A0185	.PROFILE, VERTICAL		EA	2
13	R12920546	R12920546	A0185	.PROFILE, HORIZONTAL		EA	2
14	R12920545	R12920545	A0185	.PROFILE, VERTICAL LEFT		EA	2
15	R12920582	R12920582	A0185	.SCREW COVER, LG=3.28 FT		EA	8
16	R12920535	R12920535	A0185	.PROFILE, HORIZONTAL		EA	2
17	R12920563	R12920563	A0185	.PROFILE, VERTICAL		EA	2
18	R12920553	R12920553	A0185	.PROFILE, VERTICAL		EA	2
19	R12920523	R12920523	A0185	.PANEL, SIDE		EA	2
20	R12920521	R12920521	A0185	.PANEL, SIDE		EA	2
21	R12920527	R12920527	A0185	.PROFILE, VERTICAL		EA	8
22	R12920542	R12920542	A0185	.PROFILE WITH GASKET		EA	2
23	R12920520	R12920520	A0185	.PANEL, SIDE		EA	2
24	R12920530	R12920530	A0185	.PROFILE, VERTICAL		EA	6
25	R12920532	R12920532	A0185	.PROFILE, VERTICAL		EA	2
26	R12920550	R12920550	A0185	.PROFILE, HORIZONTAL		EA	2
27	R12920522	R12920522	A0185	.PANEL, SIDE		EA	2
28	R12920531	R12920531	A0185	.PROFILE, VERTICAL		EA	4
29	R12920568	R12920568	A0185	.PROFILE, HORIZONTAL		EA	2
30	R12920534	R12920534	A0185	.PROFILE, HORIZONTAL		EA	2
31	R12920557	R12920557	A0185	.PROFILE, HORIZONTAL		EA	2
32	R12920547	R12920547	A0185	.PROFILE, HORIZONTAL RIGHT		EA	2
33	R12920548	R12920548	A0185	.PROFILE, VERTICAL RIGHT		EA	2
34	R12920533	R12920533	A0185	.PROFILE, HORIZONTAL		EA	2
35	R12920555	R12920555	A0185	.PROFILE, VERTICAL		EA	2
36	R12920554	R12920554	A0185	.PROFILE, VERTICAL		EA	2
37	R12920585	R12920585	A0185	.SCREW COVER, LG=6.59 FT		EA	1
38	R12920583	R12920583	A0185	.SCREW COVER, LG=7.99 FT		EA	1
39	R12920539	R12920539	A0185	.PROFILE WITH BRACKET		EA	2
40	R12920524	R12920524	A0185	.PANEL, SIDE		EA	1
41	R12920549	R12920549	A0185	.PROFILE, HORIZONTAL		EA	1
42	R12920571	R12920571	A0185	.PROFILE, VERTICAL		EA	1
43	R12920556	R12920556	A0185	.PROFILE, HORIZONTAL		EA	2
44	R12920518	R12920518	A0185	.PANEL, SIDE		EA	2
45	R12920564	R12920564	A0185	.PROFILE, VERTICAL		EA	2
46	R12920529	R12920529	A0185	.PROFILE, VERTICAL		EA	2
47	R12920580	R12920580	A0185	.SCREW COVER, LG=3.63 FT		EA	8
48	R12920540	R12920540	A0185	.PROFILE WITH GASKET		EA	2
49	R12920516	R12920516	A0185	.SIDE PANEL		EA	2

Inner Body Side Lining (Fig. 2-58)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-058- 50	R12920544	R12920544	A0185	.PROFILE, HORIZONTAL LEFT		EA	2
51	R12920551	R12920551	A0185	.PROFILE, VERTICAL		EA	1
52	R129205751	NO 8-32 UNCx3/4 ANSI B18.6.4d4	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.4		EA	275
53	R129205752	NO 8-32 UNCx5/8 ANSI B18.6.3a1	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3		EA	8
54	R12920591	R12920591	A0185	.GASKET-0.787x0.118		FT	214
55	R129205753	NO 8x3/4 ANSI B18.6.1a	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD-NO 8x3/4 ANSI B18.6.1		EA	30

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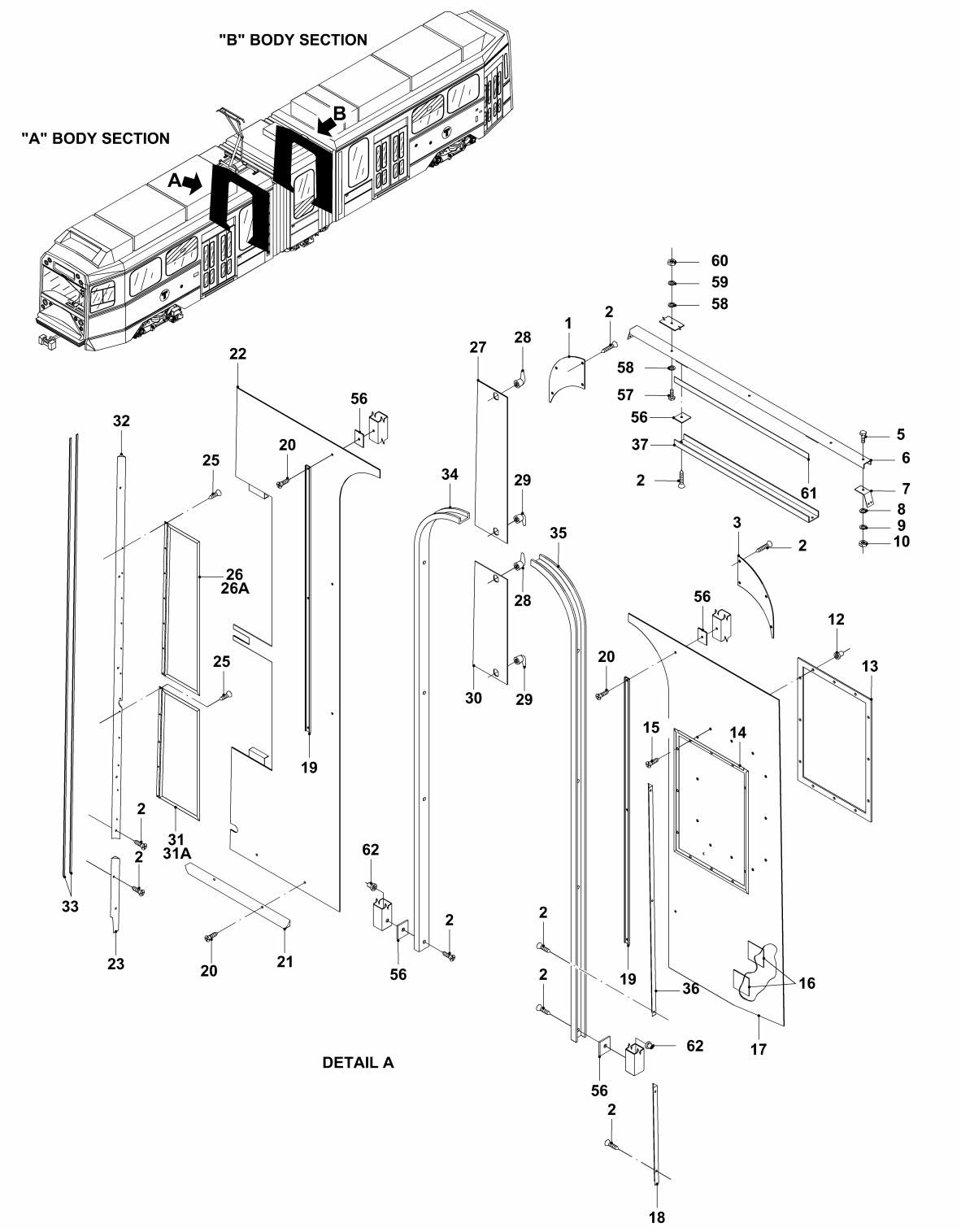

Figure 2-59 Car C Layout (Sheet 1 of 2)

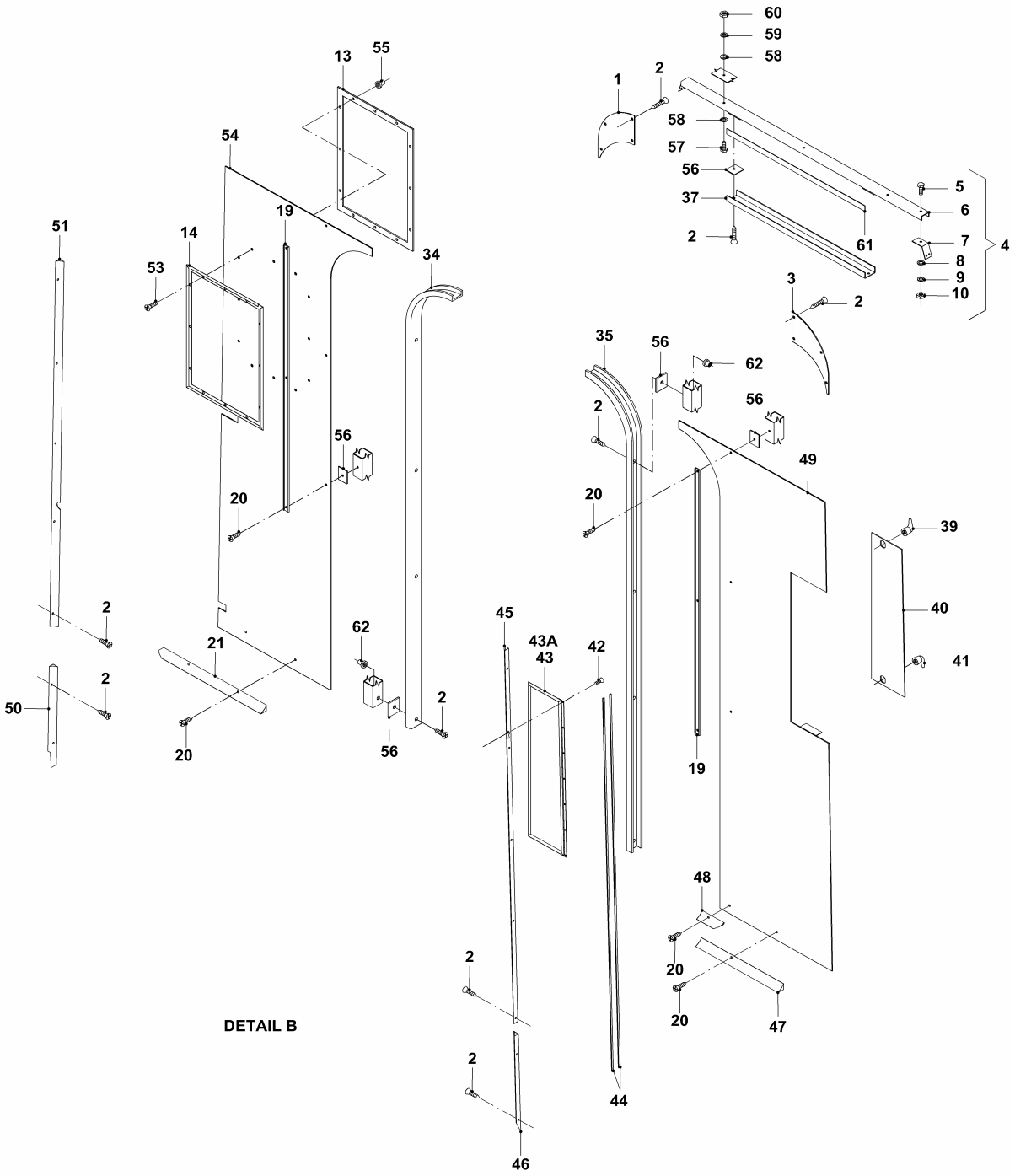

Figure 2-59 Car C Layout (Sheet 2 of 2)

Car C Layout (Fig. 2-59)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-059-	R12920700	R12920700	A0185	CAR C LAYOUT		EA	
1	R12920821	R12920821	A0185	.SHEET		EA	
2	R129208377	NO 8-32 UNCx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	5
3	R12920822	R12920822	A0185	.SHEET		EA	
4	R12920815	R12920815	A0185	.PROFILE ASSY		EA	
5	R129208151	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	..SCREW, HEX -1/4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	
6	R12920724	R12920724	A0185	..PROFILE		EA	
7	R12920817	R12920817	A0185	..BRACKET		EA	
8	R129208153	1/4 ANSI B27.1 -S	Z9009	..WASHER, HEL SPRING-1/4 -ATT.PT ANSI B27.1 - SSTL AISI 302		EA	
9	R129208152	1/4 B ANSI B27.2-S	Z9009	..WASHER, PLAIN TYPE B-1/4 -ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	
10	R129208154	1/4-20 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	
11	R12920712	R12920712	A0185	.PANEL ASSY, RIGHT, A BODY - ATT.PT SECTION SIDE		EA	
12	R129207122	NO 8-32 UNC	Z9009	..THREADED INSERT HEX - NO - ATT.PT 8-32 UNC – SSTL		EA	1
13	R12920937	R12920937	A0185	..FRAME - 0.08x15.78x22.48 - SSTL AISI 304		EA	
14	R12920771	R12920771	A0185	..ADVERTISING CARD HOLDER		EA	
15	R129207123	NO 8-32 UNCx5/8 ANSI B18.3cS	Z9009	..SCREW, HEX SOCKET HD - ATT.PT CAP - NO 8-32 UNCx5/8 ANSI B18.3 - SSTL AISI 304		EA	1
16	R12920715	R12920715	A0185	..SHEET - 3.94x3.94x0.06 - SSTL AISI 304		EA	
17	R12920714	R12920714	A0185	..PANEL, RIGHT		EA	
18	R12920819	R12920819	A0185	.FRAME		EA	
19	R12920719	R12920719	A0185	.GUIDE, TAPE SWITCH		EA	
20	R129208371	NO 8-32 UNCx1 ANSI B18.6.4dN	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1 ANSI B18.6.4 - STL ZNP		EA	1
21	R12920720	R12920720	A0185	.SUPPORT, LOWER		EA	
22	R12920828	R12920828	A0185	.PANEL, LEFT, A BODY SECTION SIDE		EA	
23	R12920812	R12920812	A0185	.FRAME		EA	
24	R12920713	R12920713	A0185	.PANEL, JAMB LEFT - ATT.PT		EA	
25	R129207133	NO 6-32 UNCx1/4 ANSI B18.6.3c	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 6-32 UNCx1/4 ANSI B18.6.3		EA	2
26	R12920799	R12920799	A0185	..FRAME		EA	
26A	R12920884	R12920884	A0185	...HINGE		EA	
27	R12920795	R12920795	A0185	..LAMINATE		EA	
28	R12312681	R12312681	A0185	..LOCK, TYPE A		EA	
29	R12312684	R12312684	A0185	..LOCK, TYPE D		EA	
30	R12920796	R12920796	A0185	..LAMINATE		EA	
31	R12920798	R12920798	A0185	..FRAME		EA	
31A	R12920878	R12920878	A0185	..HINGE		EA	
32	R12920797	R12920797	A0185	..FRAME		EA	
33	R12920723	R12920723	A0185	..GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 79.28x0.79x0.12 – HARD 70 SHORE		EA	
34	R12920716	R12920716	A0185	.FRAME, LEFT		EA	
35	R12920717	R12920717	A0185	.FRAME, RIGHT		EA	

Car C Layout (Fig. 2-59)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-059- 36	R12920816	R12920816	A0185	.FRAME		EA	1
37	R12920718	R12920718	A0185	.FRAME, UPPER		EA	2
38	R12920705	R12920705	A0185	.PANEL, JAMB RIGHT		EA	1
39	R12312681	R12312681	A0185	..LOCK, TYPE A		EA	1
40	R12920806	R12920806	A0185	..LAMINATE		EA	1
41	R12312684	R12312684	A0185	..LOCK, TYPE D		EA	1
42	R129207053	NO 6-32 UNCx1/4 ANSI B18.6.3c	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 6-32 UNCx1/4 ANSI B18.6.3		EA	14
43	R12920808	R12920808	A0185	..FRAME		EA	1
43A	R12920890	R12920890	A0185	...HINGE		EA	
44	R12920809	R12920809	A0185	..GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 80.48x0.79x0.12 – HARD 70 SHORE		EA	2
45	R12920807	R12920807	A0185	..FRAME		EA	1
46	R12920813	R12920813	A0185	.FRAME		EA	1
47	R12920722	R12920722	A0185	.FRAME		EA	1
48	R12920721	R12920721	A0185	.SUPPORT, LOWER		EA	2
49	R12920829	R12920829	A0185	.PANEL, RIGHT, B BODY SECTION SIDE		EA	
50	R12920788	R12920788	A0185	.FRAME		EA	1
51	R12920789	R12920789	A0185	.FRAME		EA	1
52	R12920706	R12920706	A0185	.PANEL ASSY, LEFT, B BODY SECTION SIDE		EA	1
53	R129207063	NO 8-32 UNCx5/8 ANSI B18.3cS	Z9009	..SCREW, HEX SOCKET HD - ATT.PT CAP - NO 8-32 UNCx5/8 ANSI B18.3 - SSTL AISI 304		EA	12
54	R12920827	R12920827	A0185	..PANEL, LEFT		EA	1
55	R129207062	NO 8-32 UNC	Z9009	..THREADED INSERT HEX - NO - ATT.PT 8-32 UNC - SSTL		EA	12
56	R12920792	R12920792	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - HARD 70 SHORE		EA	20
57	R129208372	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX -1/4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	6
58	R129208374	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
59	R129208373	1/4 B ANSI B27.2-S	Z9009	.WASHER, PLAIN TYPE B-1/4 B -ATT.PT ANSI B27.2 - SSTL AISI 304		EA	12
60	R129208375	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	6
61	R12920784	R12920784	A0185	.GASKET, NEOPRENE, - ATT.PT SELF-STICKING ON ONE SIDE		EA	5
62	R129208376	NO 8-32 UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8-32 UNC - SSTL		EA	20

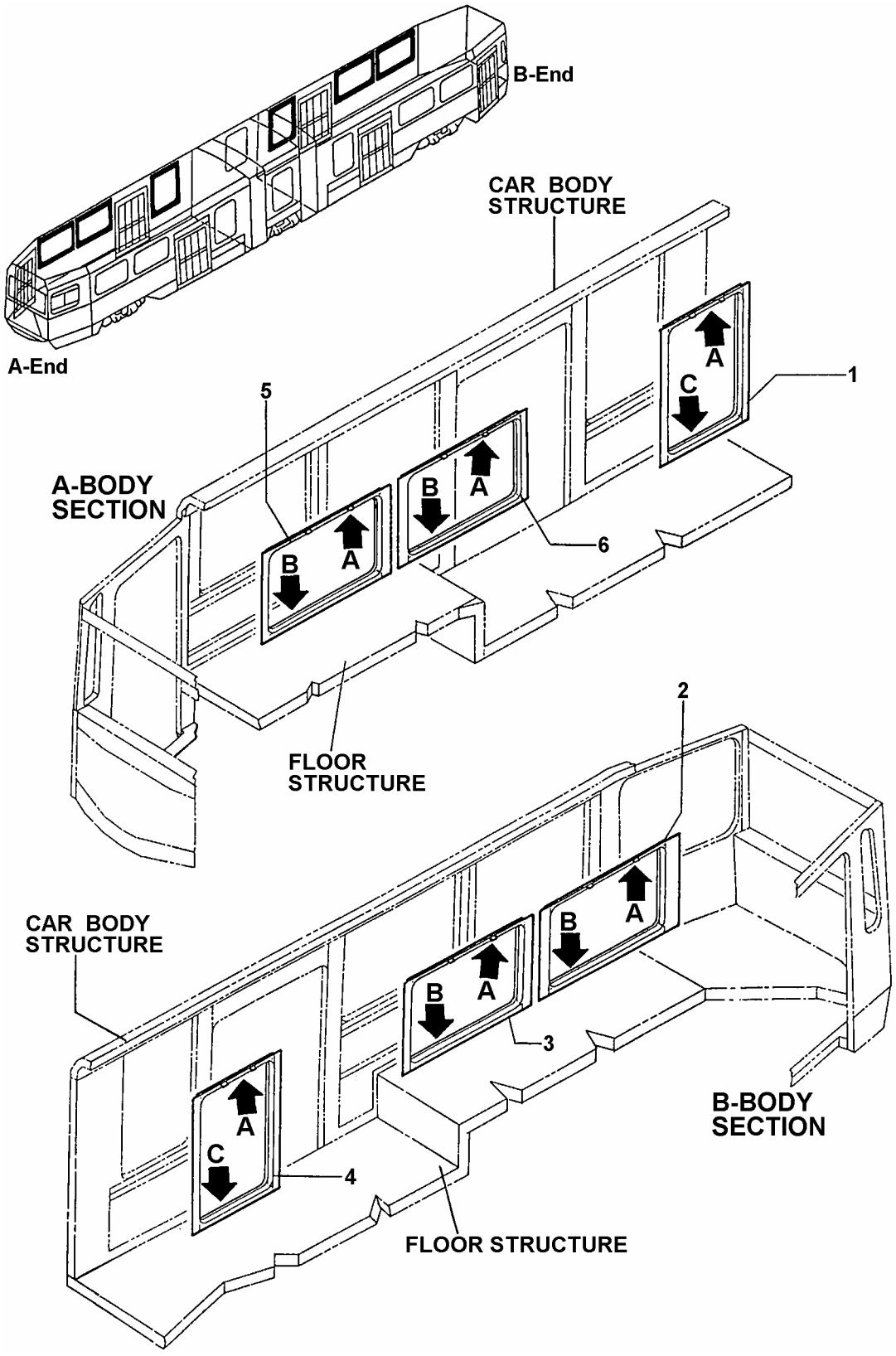

Figure 2-60 Inner Window Frames Installation (Sheet 1 of 3)

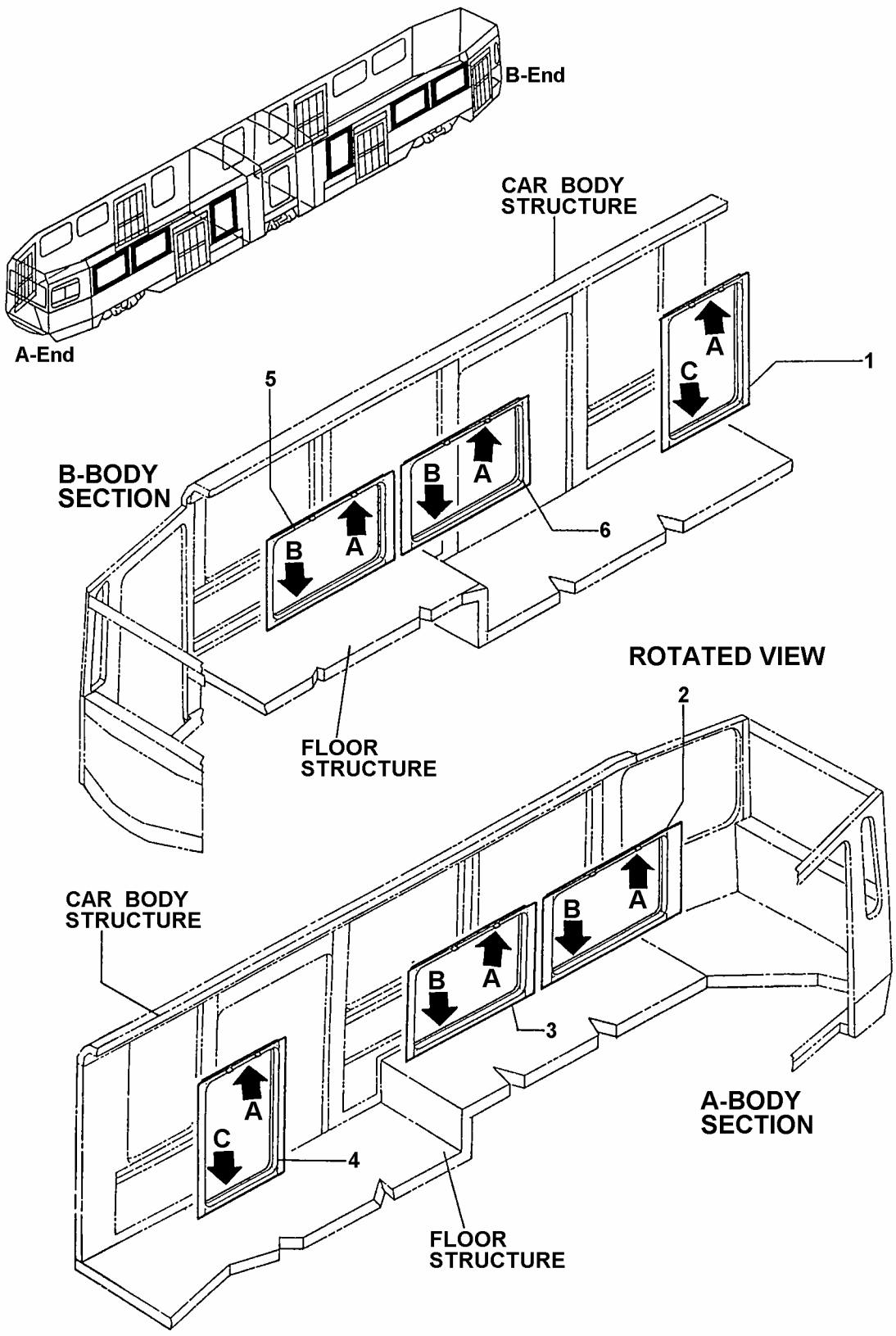

Figure 2-60 Inner Window Frames Installation (Sheet 2 of 3)

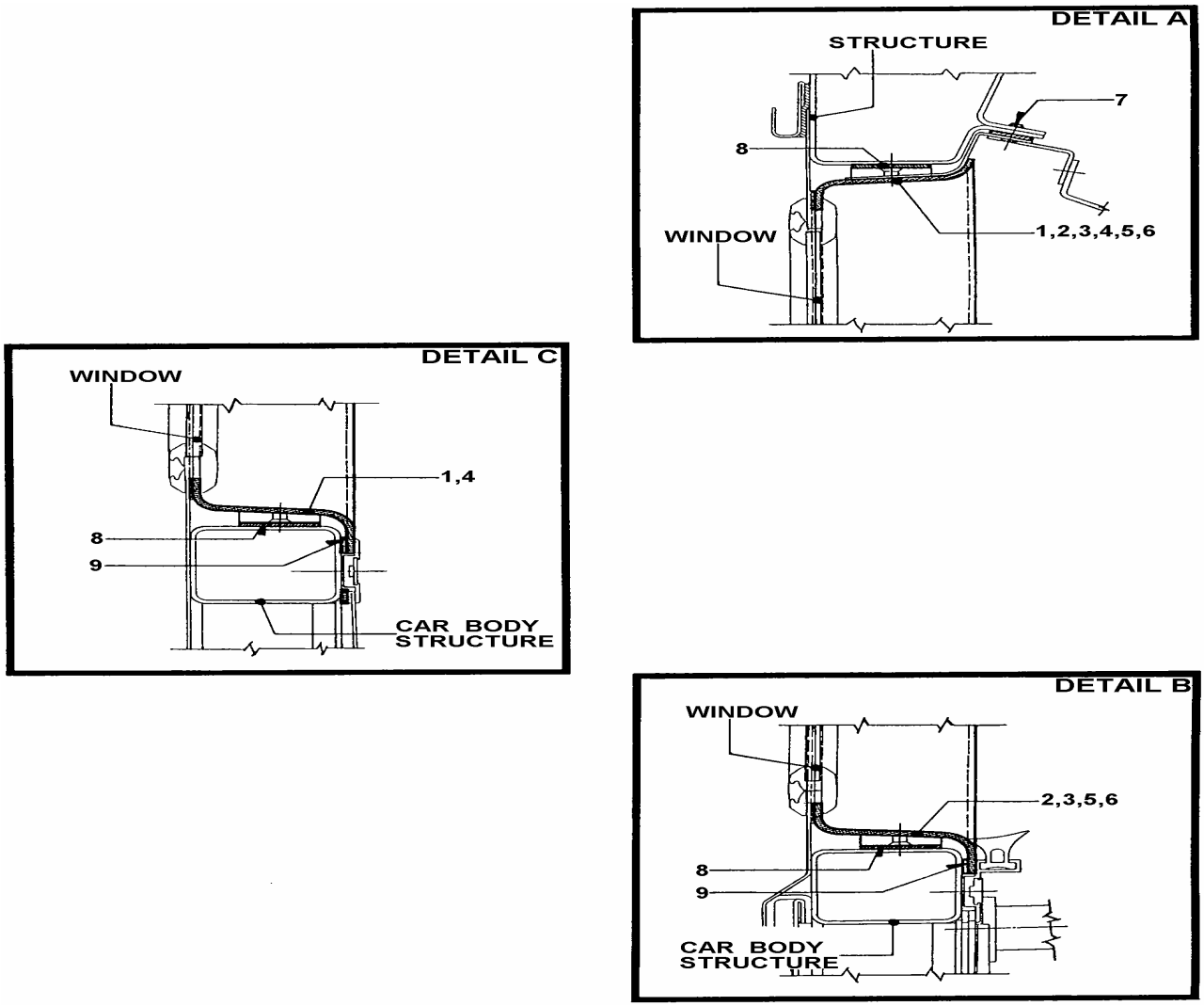

Figure 2-60 Inner Window Frames Installation (Sheet 3 of 3)

Inner Window Frames Installation (Fig. 2-60)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-060-	R12920603	R12920603	A0185	INNER WINDOW FRAMES INSTALLATION		EA	1
1	R12920615	R12920615	A0185	.WINDOW FRAME		EA	2
2	R12920612	R12920612	A0185	.WINDOW FRAME		EA	2
3	R12920613	R12920613	A0185	.WINDOW FRAME		EA	2
4	R12920616	R12920616	A0185	.WINDOW FRAME		EA	2
5	R12920611	R12920611	A0185	.WINDOW FRAME		EA	2
6	R12920618	R12920618	A0185	.WINDOW FRAME		EA	2
7	R129206031	TAP.K 44 BS	Z9009	.RIVET, BLIND, POP - TAP.K 44 - ATT.PT BS		EA	20
8	R12920651	R12920651	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 1.57x0.12 - HARD 70 SHORE		FT	51.7
9	R12920652	R12920652	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 0.59x0.08 - HARD 70 SHORE		FT	275.2

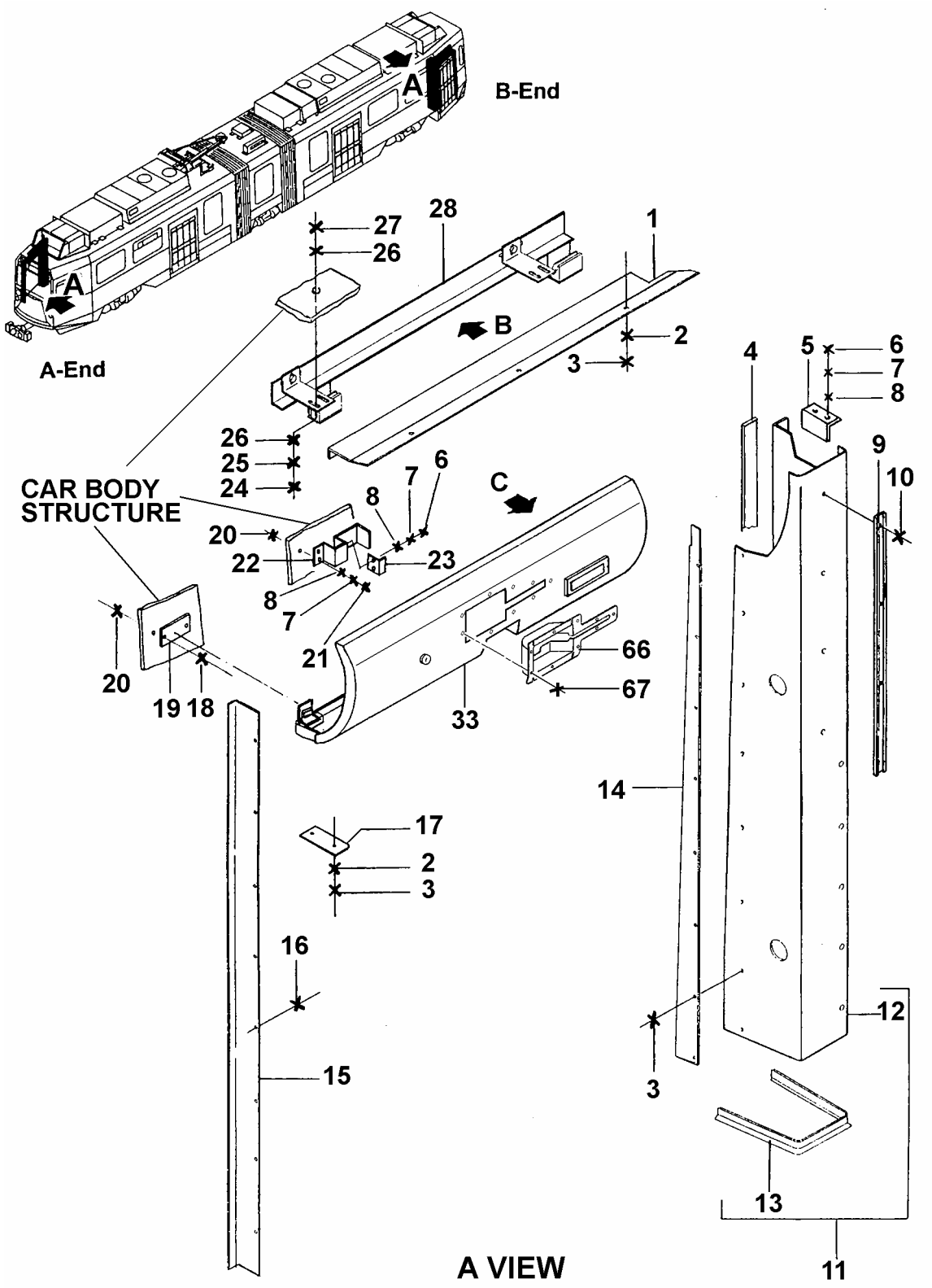

Figure 2-61 Door Covers Raised Area (Sheet 1 of 3)

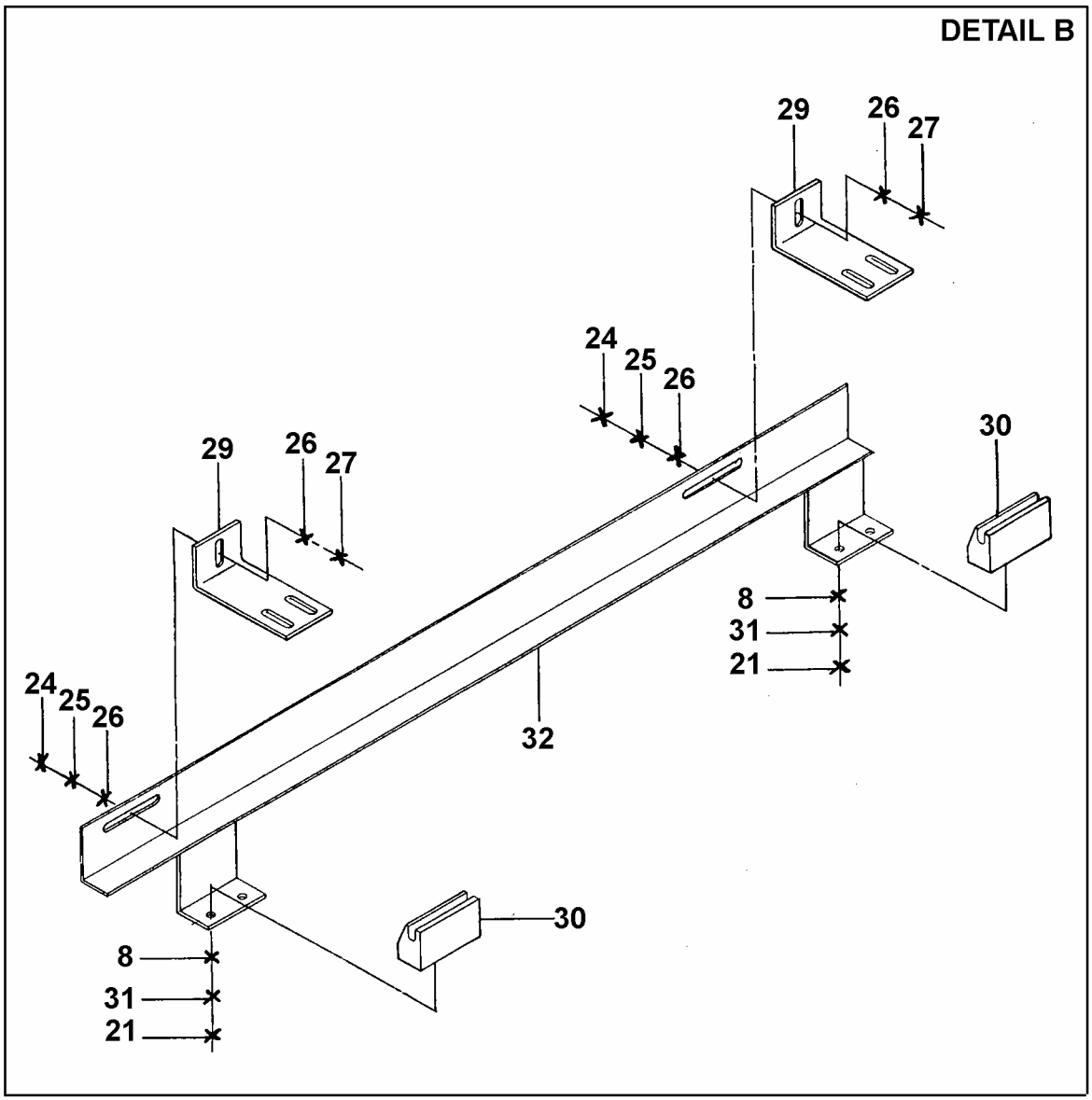

Figure 2-61 Door Covers Raised Area (Sheet 2 of 3)

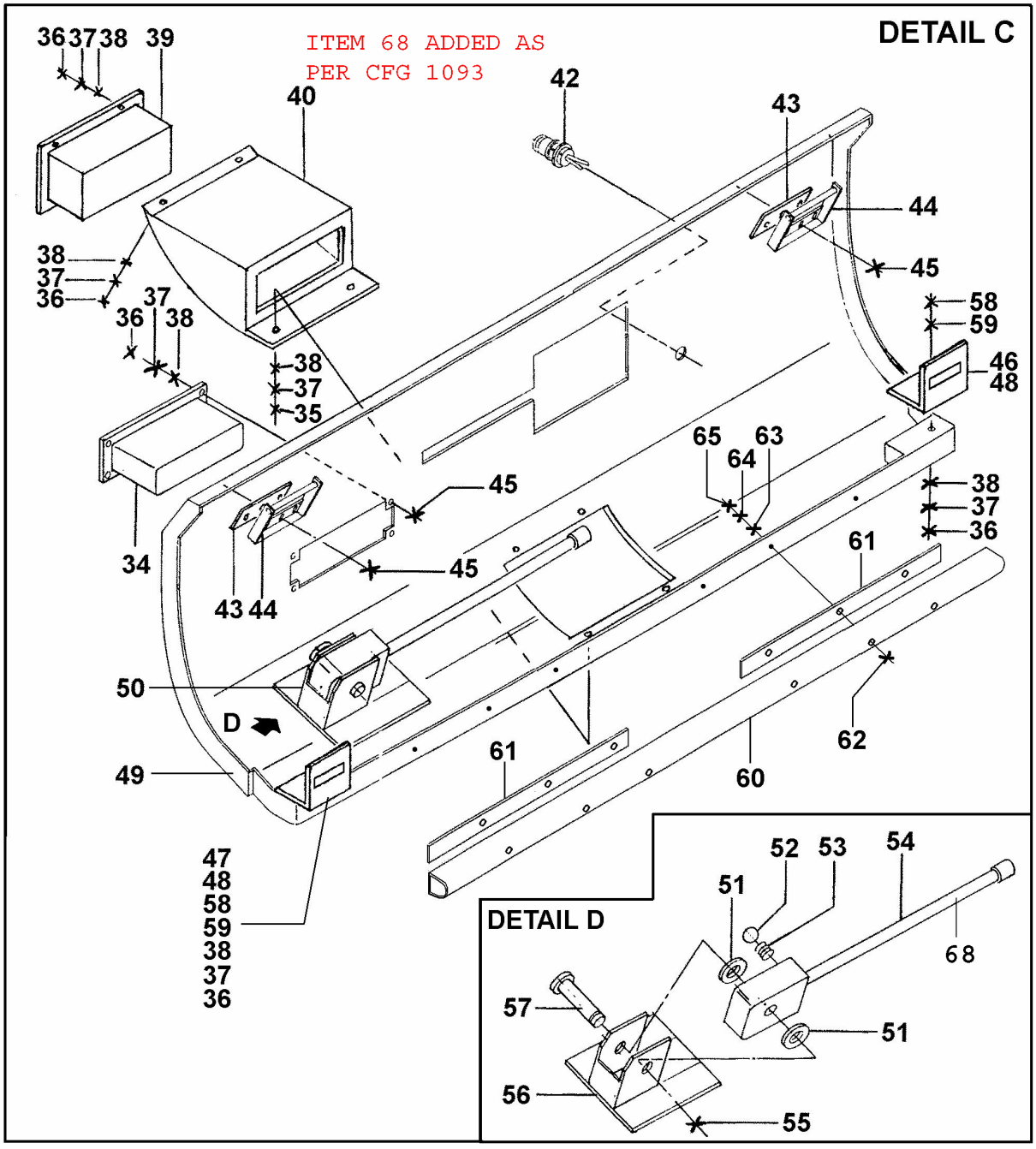

Figure 2-61 Door Covers Raised Area (Sheet 3 of 3)

Door Covers Raised Area (Fig. 2-61)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-061-	R12920300	R12920300	A0185	DOOR COVERS RAISED AREA - (A1-B1)		EA	1
1	R12920359	R12920359	A0185	.SHEET		EA	2
2	R129203467	UNI 6594-MS	Z9009	.WASHER - UNI 6594-MS - ATT.PT		EA	12
3	R129203465	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	28
4	R12920345	R12920345	A0185	.GASKET-0.78X0.12		FT	6.6
5	R12920364	R12920364	A0185	.BRACKET		EA	2
6	R1292034614	NO 8-32 UNCx1/2 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	8
7	R1292034613	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	16
8	R129203469	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	16
9	R12920315	R12920315	A0185	.GUIDE, TAPE SWITCH		EA	2
10	R1292034611	NO 8-32 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	12
11	R12920311	R12920311	A0185	.COVER		EA	2
12	R12920332	R12920332	A0185	..FIBERGLASS		EA	1
13	R12920333	R12920333	A0185	..GASKET		FT	3.3
14	R12920337	R12920337	A0185	.SHEET		EA	2
15	R12920338	R12920338	A0185	.SHEET		EA	2
16	R129203466	NO 8x5/8 ANSI B18.6.1a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8x5/8 ANSI B18.6.1 - SSTL AISI 304A		EA	16
17	R12920360	R12920360	A0185	.SHEET		EA	2
18	R1292034612	NO 8-32 UNCx1/2 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	8
19	R12920372	R12920372	A0185	.STRIKER		EA	4
20	R1292034610	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	16
21	R129203468	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	16
22	R12920375	R12920375	A0185	.BRACKET		EA	2
23	R12920376	R12920376	A0185	.STRIKER		EA	2
24	R129203464	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	10
25	R129203463	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	10
26	R129203462	1/4 B ANSI B27.2-S	Z9009	.WASHER, PLAIN TYPE B-1/4 B - ATT.PT ANSI B27.2 - SSTL AISI 304		EA	20
27	R129203461	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX -1/4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	10
28	R12920357	R12920357	A0185	.BRACKET ASSY		EA	2
29	R12920355	R12920355	A0185	..BRACKET		EA	2
30	R12920329	R12920329	A0185	..SUPPORT		EA	1
31	R129203583	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
32	R12920328	R12920328	A0185	..BRACKET		EA	1
33	R12920310	R12920310	A0185	.COVER		EA	2

Door Covers Raised Area (Fig. 2-61)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-061-34	R12495865	109387001	B0006	..DOOR OUT OF SERVICE SIGN, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-25 FOR DETAIL		EA	1
35	R1292034010	NO 8-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	5
36	R129203407	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	10
37	R129203409	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 ATT.PT ANSI B27.1 - SSTL AISI 302		EA	15
38	R129203408	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI ATT.PT B27.2 - SSTL AISI 304		EA	15
39	R1292034011	X-1255	34475	..LATCH, SPRING LOADED		EA	1
40	R12920367	R12920367	A0185	..BOX, LATCH		EA	1
41				DELETED			
42	R12430125	109391001	B0006	..LED DOOR OPEN LIGHT, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-26 FOR DETAIL		EA	1
43	R12920363	R12920363	A0185	..PLATE		EA	2
44	R12920336	R12920336	A0185	..HINGE		EA	2
45	R129203402	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	10
46	R12920371	R12920371	A0185	..BRACKET, LH		EA	1
47	R12920370	R12920370	A0185	..BRACKET, RH		EA	1
48	R1292034012	02-10-102-10	B0005	..MAGNETIC LOCK		EA	2
49	R12920331	R12920331	A0185	..FIBERGLASS		EA	1
50	R12920324	R12920324	A0185	..POLE ASSY		EA	1
51	R129203243	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002 - ATT.PT		EA	2
52	R129203241	R129203421	A0185	...SPHERE-DIA0.23		EA	1
53	R129203242	R129203422	A0185	...SPRING-0.3x1.9x4.1		EA	1
54	R12920317	R12920317	A0185	...ARM		EA	1
55	R129203244	DIA 0.19 UNI 7434	Z9009	...CIRCLIP-DIA 0.19 UNI 7434 - ATT.PT		EA	1
56	R12920316	R12920316	A0185	...SHEET		EA	1
57	R12920335	R12920335	A0185	...PIVOT-DIA 0.23		EA	1
58	R1292034017	NO 8-32 UNC IFI 100	Z9009	..NUT, SELF-LOCKING - NO 8-32 ATT.PT UNC IFI 100		EA	2
59	R1292034018	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI ATT.PT B27.2 - SSTL		EA	2
60	R1292034013	R1292031013	A0185	..GASKET-L=41.73		EA	1
61	R12920309	R12920309	A0185	..PLATE		EA	2
62	R1292034014	NO 6-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - ATT.PT NO 6-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	6
63	R1292034015	NO 6 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 6 ANSI ATT.PT B27.2 - SSTL		EA	6
64	R1292034019	NO 6 ANSI B18.21.1	Z9009	..WASHER, SPRING - NO 6 ANSI ATT.PT B18.21.1 -SSTL		EA	6
65	R1292034016	NO 6-32 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX - NO 6-32 UNC ANSI ATT.PT B18.2.2- SSTL AISI 304		EA	6
66	R12354215	59930324-01	E0017	.SHROUD, MANUAL RELEASE		EA	2

Door Covers Raised Area (Fig. 2-61)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-061-67	R1292034615	NO 8-32 UNCx3/4 ANSI B18.6.4e4S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE II REC - NO 8-32 UNCx3/4 ANSI B18.6.4-SSTLAISI304A		EA	18
68	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

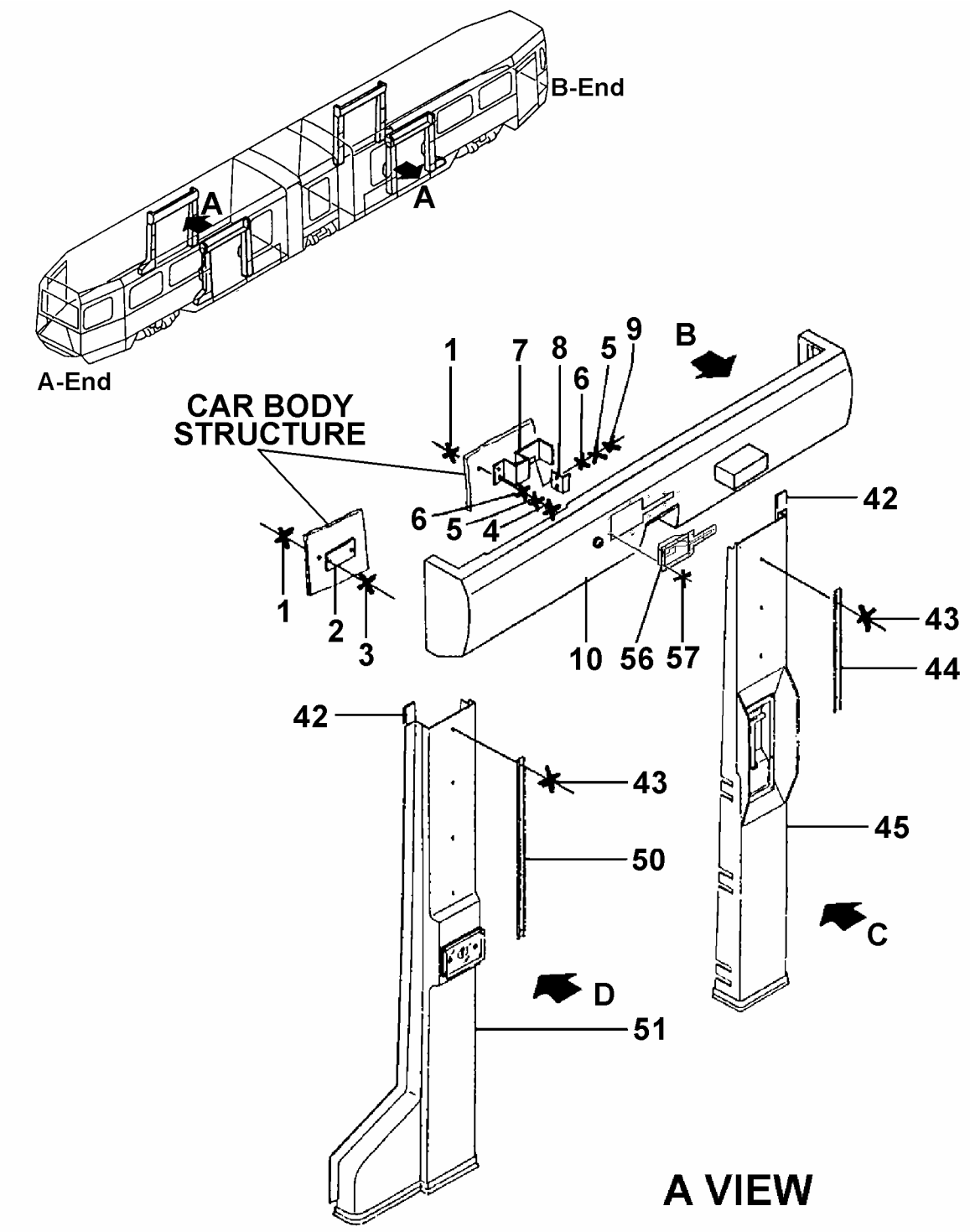

Figure 2-62 Door Covers Low Area (Sheet 1 of 3)

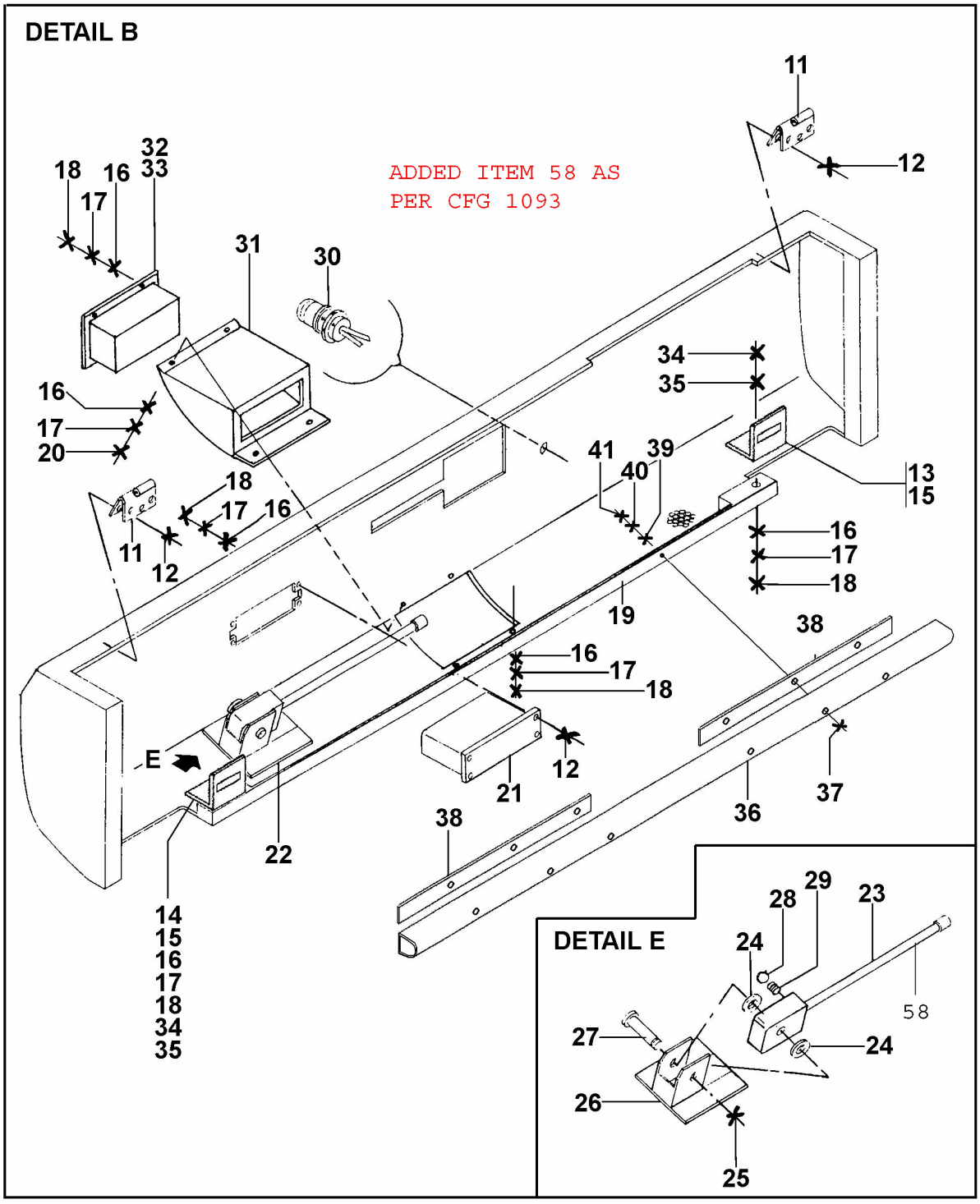

Figure 2-62 Door Covers Low Area (Sheet 2 of 3)

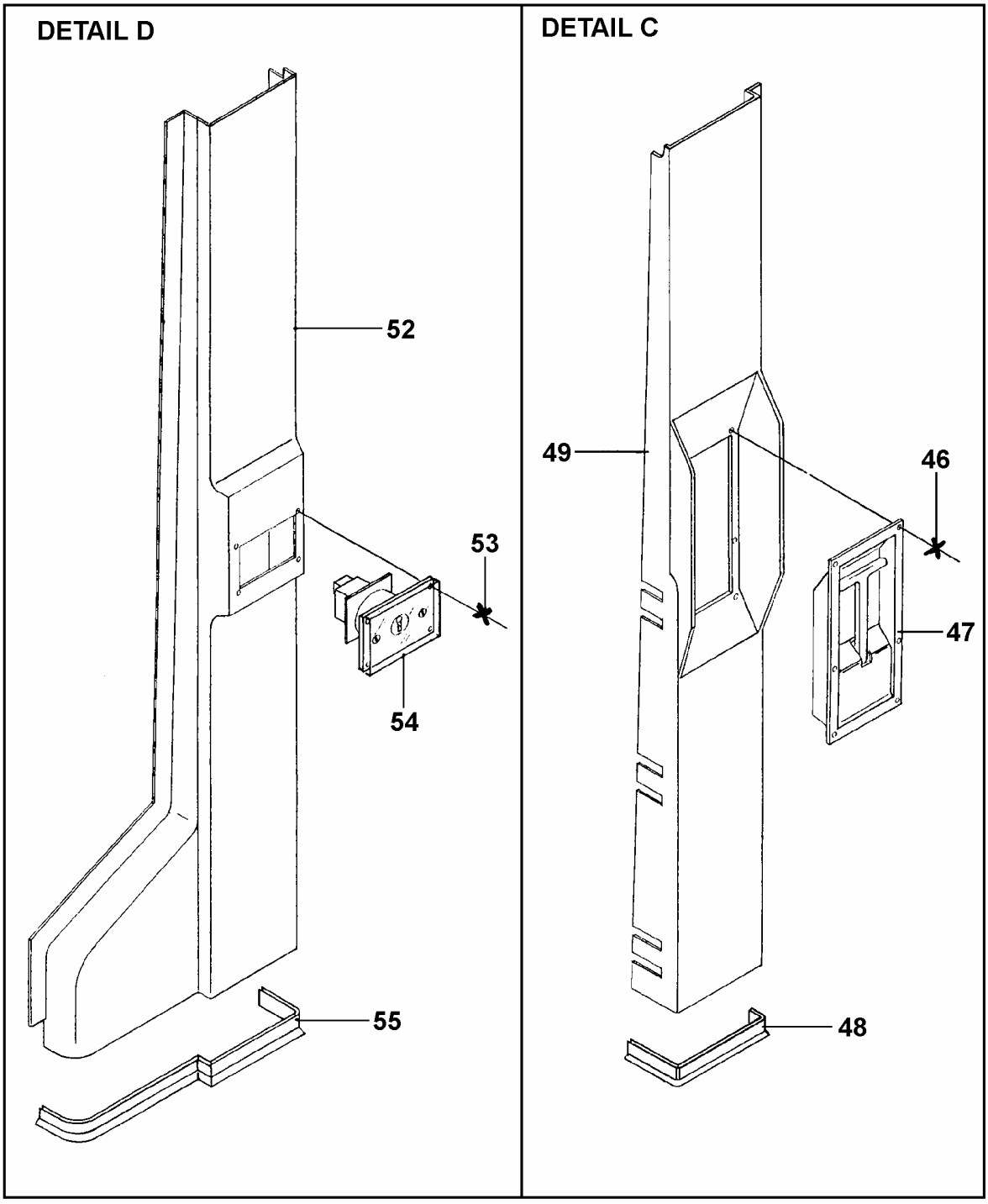

Figure 2-62 Door Covers Low Area (Sheet 3 of 3)

Door Covers Low Area (Fig. 2-62)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-062-	R12965000	R12965000	A0185	DOOR COVERS LOW AREA - (A2-B2)		EA	1
1	R129650508	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	16
2	R12920372	R12920372	A0185	.STRIKER		EA	4
3	R1296505011	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	8
4	R129650507	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	8
5	R1296505010	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	12
6	R129650509	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	12
7	R12920375	R12920375	A0185	.BRACKET		EA	2
8	R12920376	R12920376	A0185	.STRIKER		EA	2
9	R1296505012	NO 8-32 UNCx1/2 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.4 - SSTL AISI 304		EA	4
10	R12965032	R12965032	A0185	.COVER, RH		EA	2
11	R12965062	R12965062	A0185	..HINGE, RIGHT		EA	2
12	R129650324	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	10
13	R12920371	R12920371	A0185	..BRACKET		EA	1
14	R12920370	R12920370	A0185	..BRACKET		EA	1
15	R1296503219	02-10-102-10	B0005	..MAGNETIC LOCK		EA	2
16	R1296503216	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	15
17	R1296503215	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	15
18	R1296503214	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	10
19	R12965067	R12965067	A0185	..FIBERGLASS		EA	1
20	R1296503217	NO 8-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	5
21	R12495865	109387001	B0006	..DOOR OUT OF SERVICE SIGN, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-25 FOR DETAIL		EA	1
22	R12965023	R12965023	A0185	..SUPPORT ASSY		EA	1
23	R12965041	R12965041	A0185	...ARM		EA	1
24	R129650563	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002 - ATT.PT		EA	2
25	R129650564	DIA 0.19 UNI 7434	Z9009	...CIRCLIP - DIA 0.19 UNI 7434		EA	1
26	R12965040	R12965040	A0185	...SHEET		EA	1
27	R12965149	R12965149	A0185	...PIVOT		EA	1
28	R129650561	R129650561	A0185	...SPHERE-DIA0.23		EA	1
29	R129650562	R129650562	A0185	...SPRING-0.3x1.9x4.1		EA	1
30	R12430125	109391001	B0006	..LED DOOR OPEN LIGHT, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-26 FOR DETAIL		EA	1
31	R12920367	R12920367	A0185	..BOX, LATCH		EA	1
32	R12965018	R12965018	A0185	..PLATE		EA	2
33	R1296503218	X-1255	34475	..LATCH, SPRING LOADED		EA	

Door Covers Low Area (Fig. 2-62)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-062- 34	R1296503224	NO8-32UNC IFI 100	Z9009	..NUT, SELF-LOCKING - NO 8-32 - ATT.PT UNC IFI 100		EA	2
35	R1296503225	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL		EA	2
36	R1296503220	R1296503220	A0185	..GASKET-L=41.73		EA	1
37	R12965093	R12965093	A0185	..PLATE		EA	2
38	R1296503221	NO 6-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 6-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	6
39	R1296503222	NO 6 ANSI B27.2	Z9009	..WASHER, PLAIN - NO 6 ANSI - ATT.PT B27.2 - SSTL		EA	6
40	R1296503226	NO 6 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 6 - ATT.PT ANSI B27.1 - SSTL		EA	6
41	R1296503223	NO 6-32 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX - NO 6-32 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	6
42	R12965138	R12965138	A0185	.GASKET		FT	26.4
43	R129650501	NO 8-32 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	18
44	R12965037	R12965037	A0185	.GUIDE, TAPE SWITCH		EA	2
45	R12965027	R12965027	A0185	.COVER, TYPE A		EA	2
46	R129650274	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	6
47	R12354210	59660981	E0017	..MANUAL RELEASE ASSY - SEE FIG. 4-34 FOR DETAIL		EA	1
48	R12965145	R12965145	A0185	..GASKET		FT	3.3
49	R12965073	R12965073	A0185	..FIBERGLASS		EA	1
50	R12965038	R12965038	A0185	.GUIDE, TAPE SWITCH		EA	2
51	R12965029	R12965029	A0185	.COVER, TYPE B1		EA	2
52	R12965134	R12965134	A0185	..FIBERGLASS		EA	1
53	R129650294	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	4
54	R12354220	59641346	E0017	..CREW KEY SWITCH ASSY, INSIDE - SEE FIG. 4-36 FOR DETAIL		EA	1
55	R12965147	R12965147	A0185	..GASKET		FT	3.3
56	R12354209	59930324	E0017	.SHROUD, MANUAL RELEASE		EA	2
57	R1296505013	NO 8-32 UNCx3/4 ANSI B18.6.4e4S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE II REC - NO 8-32 UNCx3/4 ANSI B18.6.4- SSTL AISI 304A		EA	18
58	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

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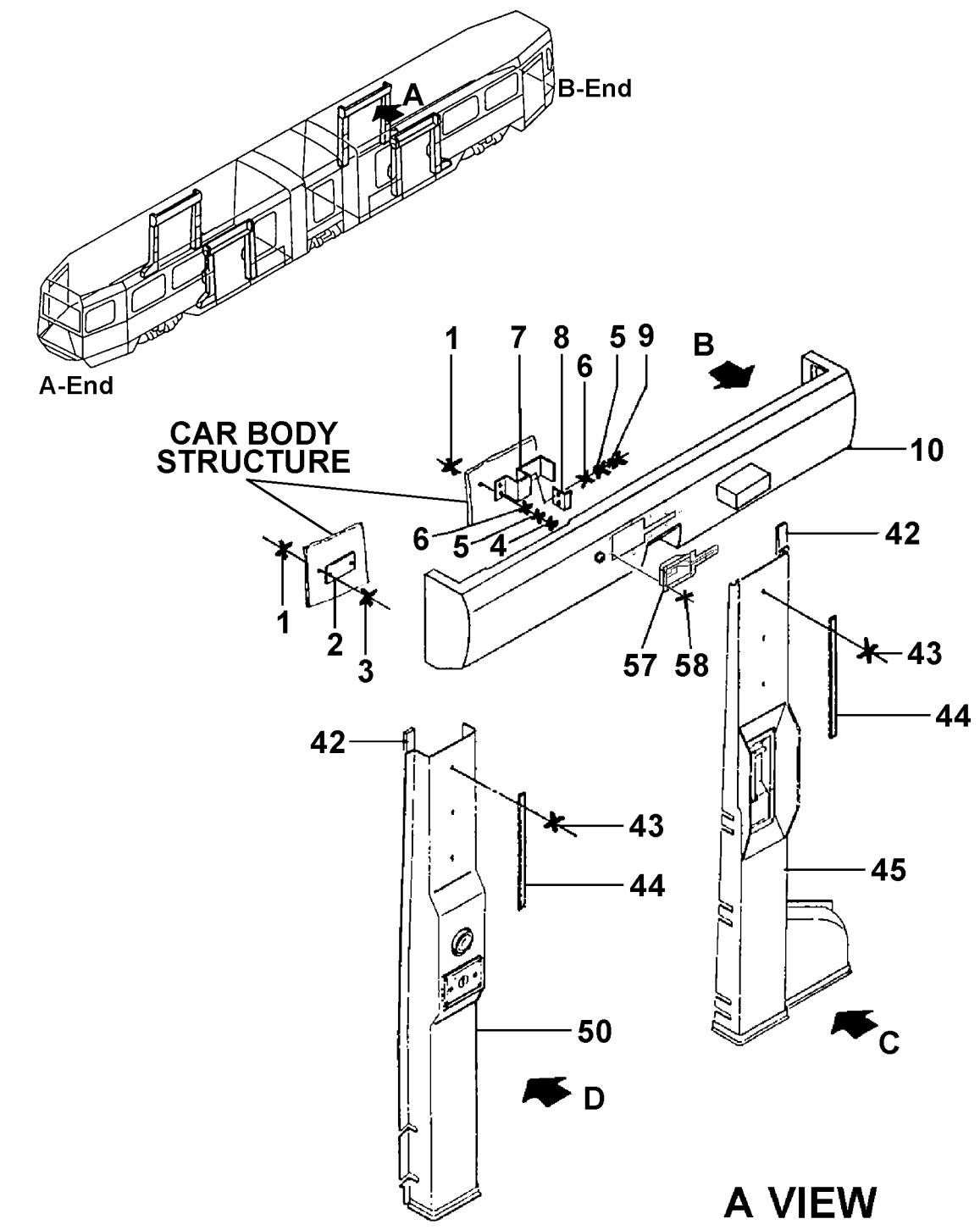

Figure 2-63 Door Covers Low Area (Sheet 1 of 3)

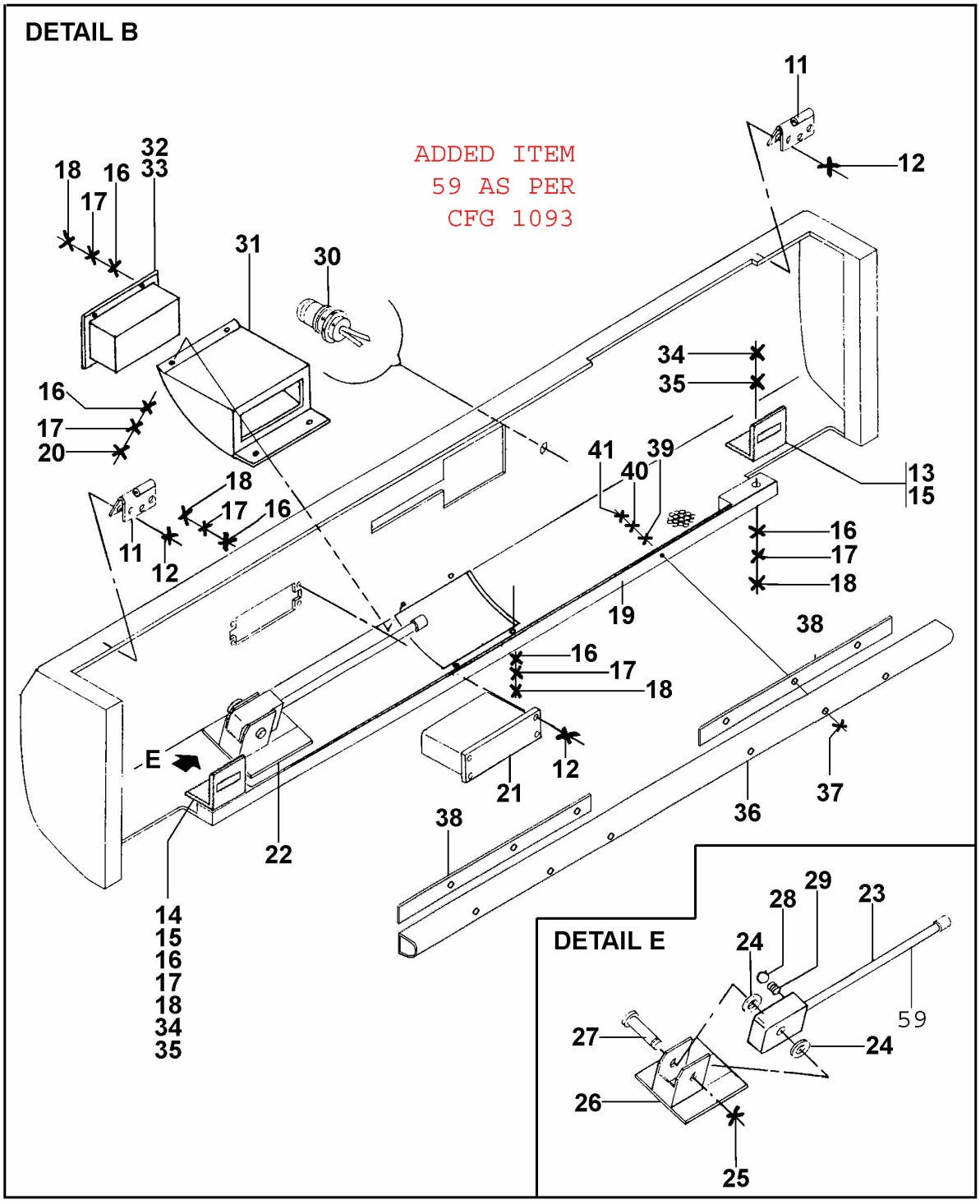

Figure 2-63 Door Covers Low Area (Sheet 2 of 3)

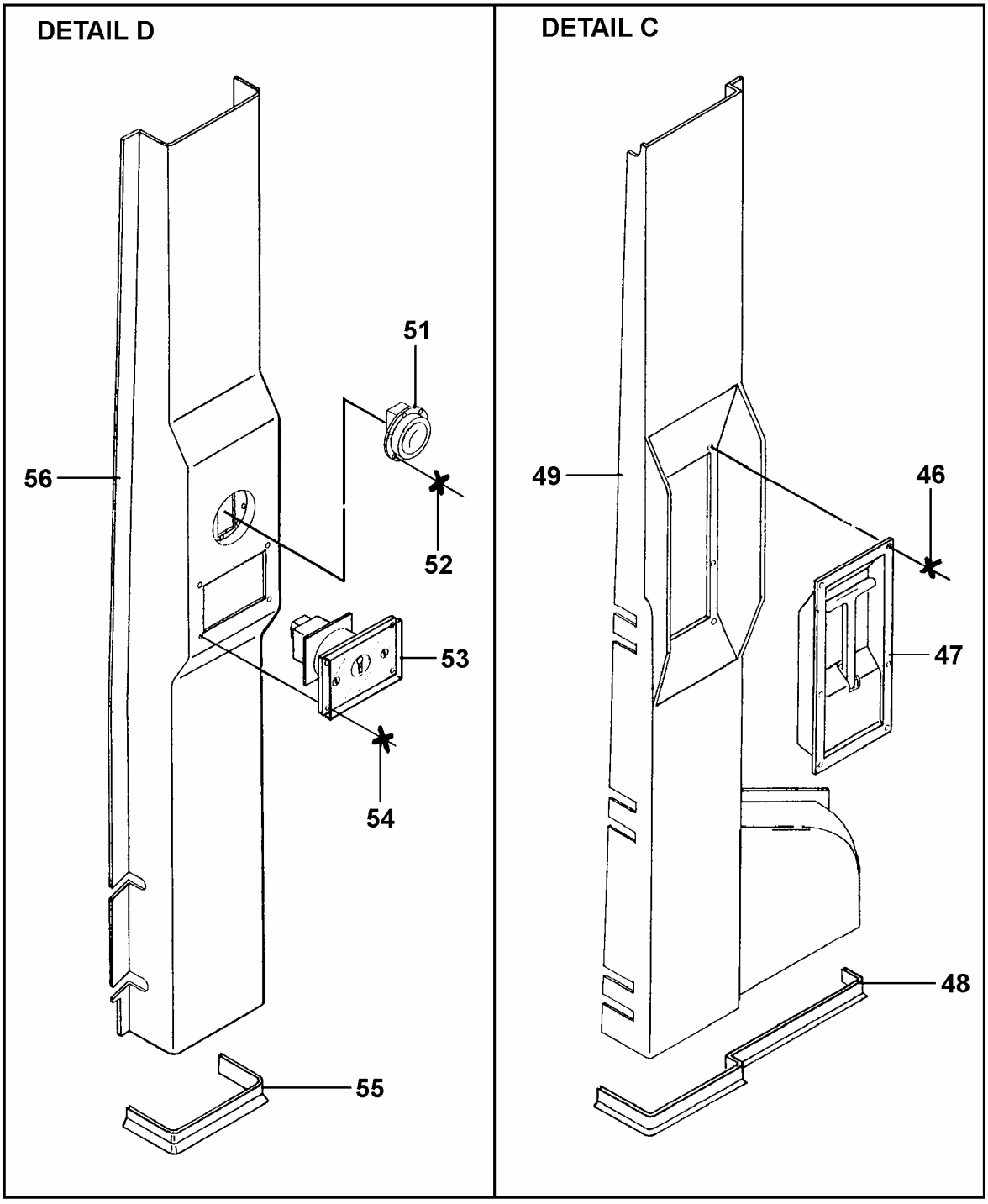

Figure 2-63 Door Covers Low Area (Sheet 3 of 3)

Door Covers Low Area (Fig. 2-63)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-063-	R12965000	R12965000	A0185	DOOR COVERS LOW AREA - (B3)		EA	1
1	R129650508	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
2	R12920372	R12920372	A0185	.STRIKER		EA	2
3	R1296505011	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	4
4	R129650507	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	4
5	R1296505010	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
6	R129650509	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	6
7	R12920375	R12920375	A0185	.BRACKET		EA	1
8	R12920376	R12920376	A0185	.STRIKER		EA	1
9	R1296505012	NO 8-32 UNCx1/2 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.4 - SSTL AISI 304		EA	2
10	R12965008	R12965008	A0185	.COVER, LH		EA	1
11	R12965063	R12965063	A0185	..HINGE, LEFT		EA	2
12	R129650684	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	10
13	R12920371	R12920371	A0185	..BRACKET		EA	1
14	R12920370	R12920370	A0185	..BRACKET		EA	1
15	R1296503319	02-10-102-10	B0005	..MAGNETIC LOCK		EA	2
16	R1296506816	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	15
17	R1296506815	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	15
18	R1296506814	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	10
19	R12965067	R12965067	A0185	..FIBERGLASS		EA	1
20	R1296506820	NO 8-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	5
21	R12495865	109387001	B0006	..DOOR OUT OF SERVICE SIGN, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-25 FOR DETAIL		EA	1
22	R12965023	R12965023	A0185	..SUPPORT		EA	1
23	R12965041	R12965041	A0185	...ARM		EA	1
24	R129650563	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002 - ATT.PT		EA	2
25	R129650564	DIA 0.19 UNI 7434	Z9009	...CIRCLIP - DIA 0.19 UNI 7434		EA	1
26	R12965040	R12965040	A0185	...SHEET		EA	1
27	R12965149	R12965149	A0185	...PIVOT		EA	1
28	R129650561	R129650561	A0185	…SPHERE-DIA0.23		EA	1
29	R129650562	R129650562	A0185	...SPRING-0.3x1.9x4.1		EA	1
30	R12430125	109391001	B0006	..LED DOOR OPEN LIGHT, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-26 FOR DETAIL		EA	1
31	R12920367	R12920367	A0185	..BOX, LATCH		EA	1
32	R12965018	R12965018	A0185	..PLATE		EA	2
33	R1296503318	X-1255	34475	..LATCH, SPRING LOADED		EA	1

Door Covers Low Area (Fig. 2-63)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-063- 34	R1296503224	NO8-32UNC IFI 100	Z9009	..NUT, HEX - NO 8-32 UNC IFI - ATT.PT 100		EA	2
35	R1296503225	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL		EA	2
36	R1296503220	R1296503220	A0185	..GASKET-L=41.73		EA	1
37	R12965093	R12965093	A0185	..PLATE		EA	2
38	R1296503221	NO 6-32 UNCx1/2 ANSI B18.6.3	Z9009	..SCREW, PH-NO 6-32 UNCx1/2 -ATT.PT ANSI B18.6.3 - SSTL AISI 304		EA	6
39	R1296503222	NO 6 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 6 ANSI - ATT.PT B27.2 - SSTL		EA	6
40	R1296503226	NO 6 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 6 - ATT.PT ANSI B27.1 - SSTL		EA	6
41	R1296503223	NO 6-32 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX - NO 6-32 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	6
42	R12965138	R12965138	A0185	.GASKET		FT	13.2
43	R129650501	NO 8-32 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	8
44	R12965037	R12965037	A0185	.GUIDE, TAPE SWITCH		EA	2
45	R12965020	R12965020	A0185	.COVER, TYPE A1		EA	1
46	R129650204	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	6
47	R12354210	59660981	E0017	..MANUAL RELEASE ASSY - SEE FIG. 4-34 FOR DETAIL		EA	1
48	R12965024	R12965024	A0185	..GASKET		FT	3.3
49	R12965022	R12965022	A0185	..FIBERGLASS		EA	1
50	R12965028	R12965028	A0185	.COVER, TYPE B		EA	1
51	R12354222	59631343	E0017	..PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
52	R129650285	NO 10-24 UNCx1-1/4 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx1-1/4 ANSI B18.3-SSTL AISI 304		EA	6
53	R12354220	59641346	E0017	..CREW KEY SWITCH ASSY, INSIDE - SEE FIG. 4-36 FOR DETAIL		EA	1
54	R129650284	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	4
55	R12965146	R12965146	A0185	..GASKET		FT	3.3
56	R12965079	R12965079	A0185	..FIBERGLASS		EA	1
57	R12354209	59930324	E0017	.SHROUD, MANUAL RELEASE		EA	1
58	R1296505013	NO 8-32 UNCx3/4 ANSI B18.6.4e4S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE II REC - NO 8-32 UNCx3/4 ANSI B18.6.4 - SSTL AISI 304A		EA	9
59	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

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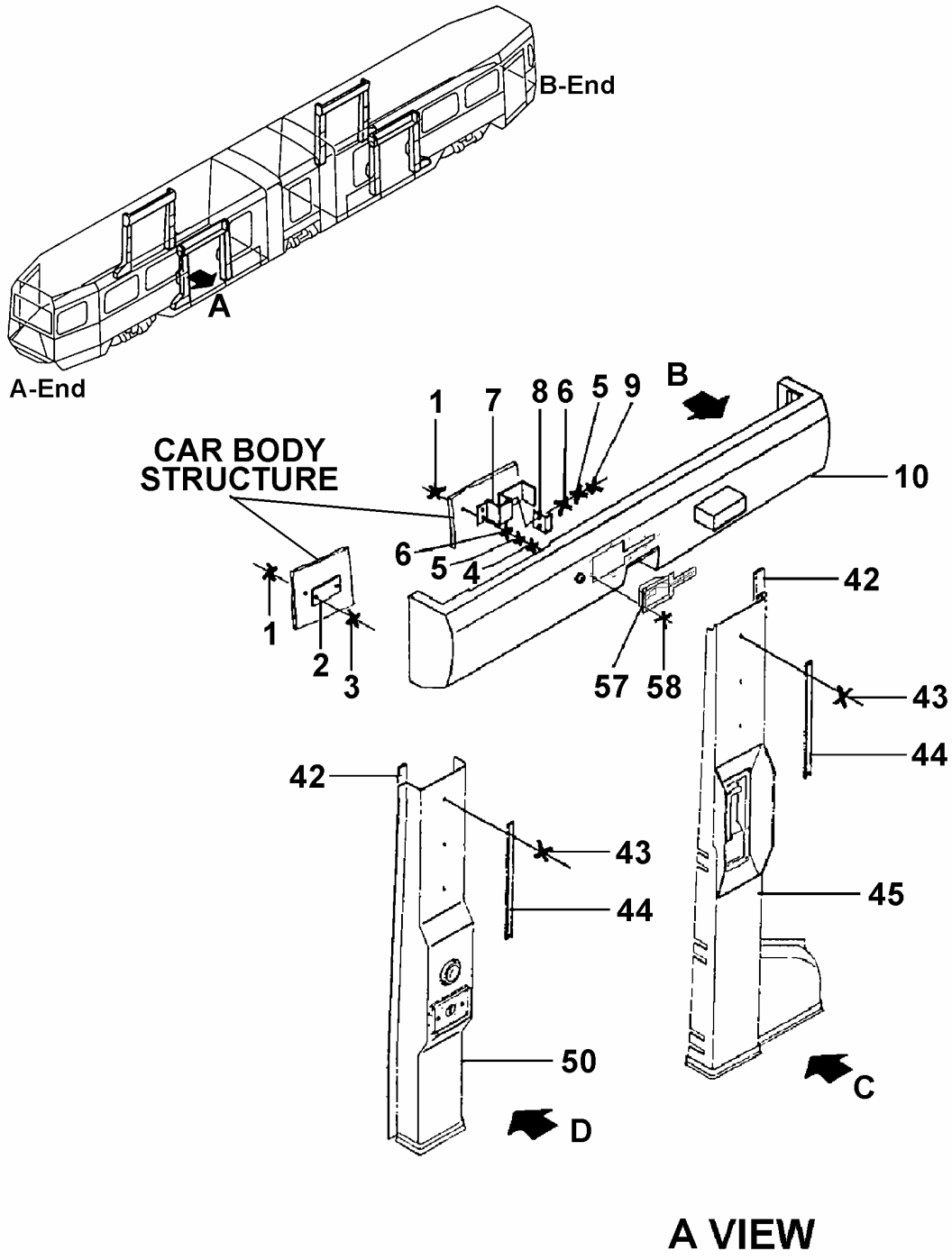

Figure 2-64 Door Covers Low Area (Sheet 1 of 3)

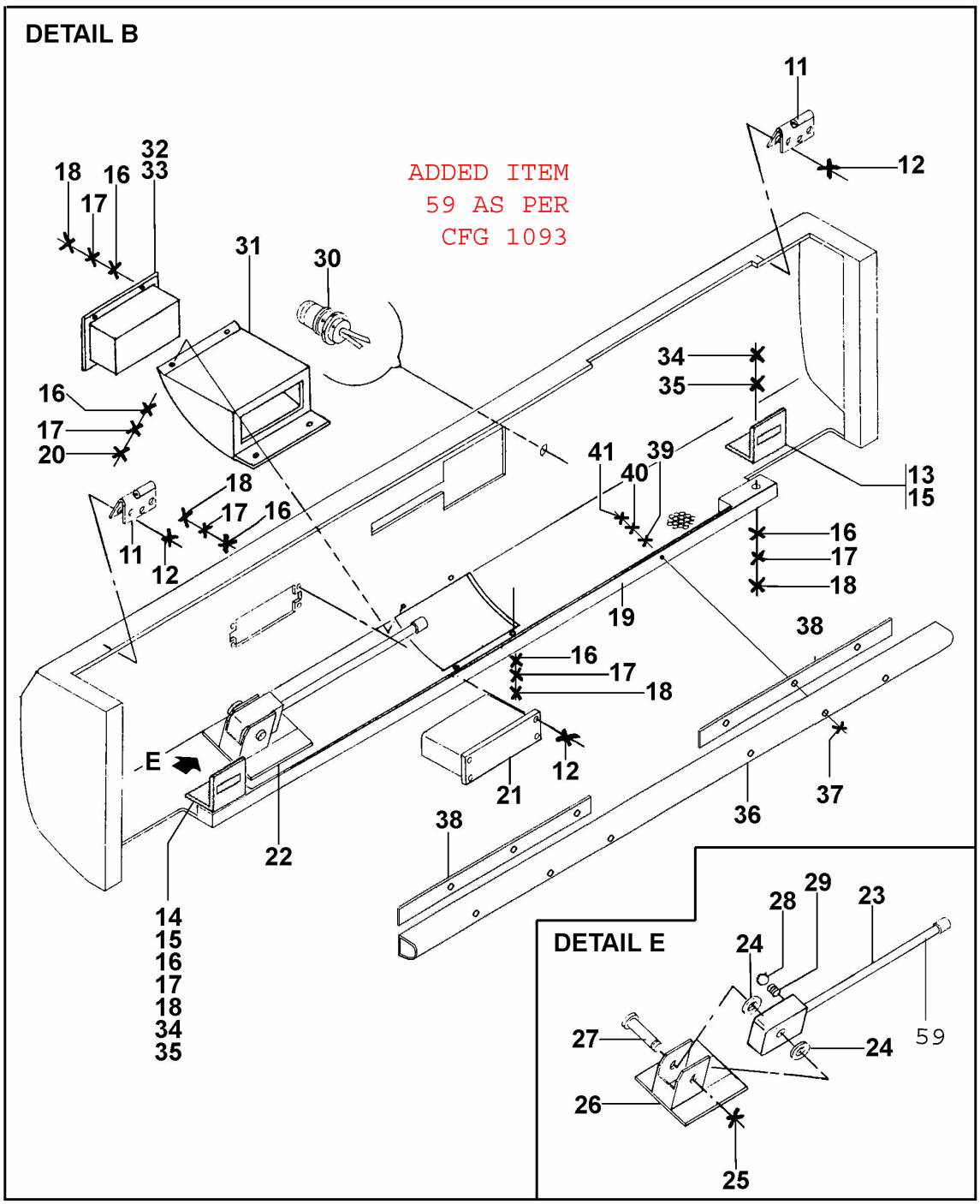

Figure 2-64 Door Covers Low Area (Sheet 2 of 3)

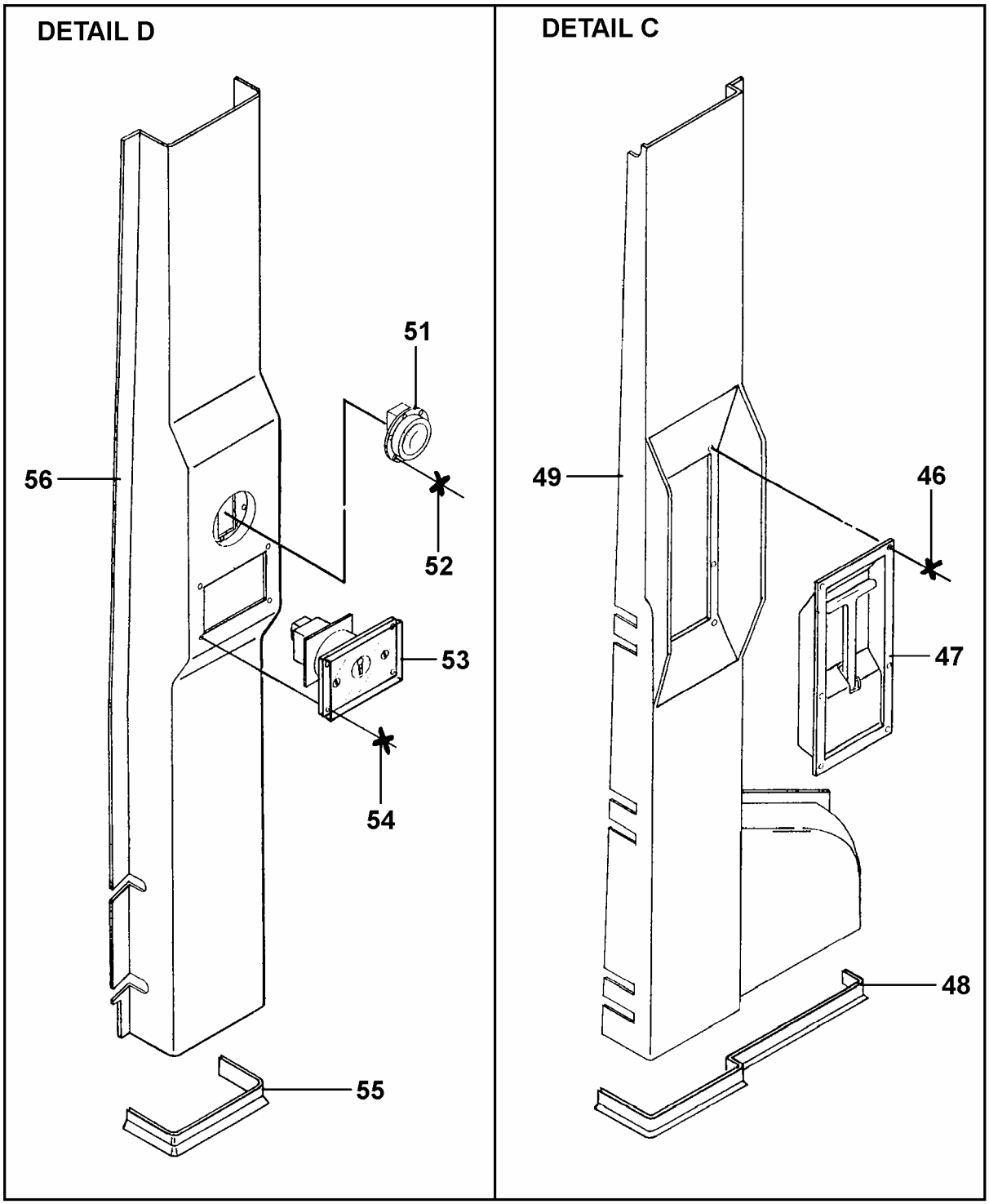

Figure 2-64 Door Covers Low Area (Sheet 3 of 3)

Door Covers Low Area (Fig. 2-64)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-064-	R12965000	R12965000	A0185	DOOR COVERS LOW AREA - (A3)		EA	1
1	R129650508	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
2	R12920372	R12920372	A0185	.STRIKER		EA	2
3	R1296505011	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	4
4	R129650507	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	4
5	R1296505010	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	6
6	R129650509	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	6
7	R12920375	R12920375	A0185	.BRACKET		EA	1
8	R12920376	R12920376	A0185	.STRIKER		EA	1
9	R1296505012	NO 8-32 UNCx1/2 ANSI B18.6.4eS	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.4 - SSTL AISI 304		EA	2
10	R12965008	R12965008	A0185	.COVER, LH		EA	1
11	R12965063	R12965063	A0185	..HINGE, LEFT		EA	2
12	R129650684	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	10
13	R12920371	R12920371	A0185	..BRACKET		EA	1
14	R12920370	R12920370	A0185	..BRACKET		EA	1
15	R1296503319	02-10-102-10	B0005	..MAGNETIC LOCK		EA	2
16	R1296506816	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	15
17	R1296506815	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	15
18	R1296506814	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	10
19	R12965067	R12965067	A0185	..FIBERGLASS		EA	1
20	R1296506820	NO 8-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	5
21	R12495865	109387001	B0006	..DOOR OUT OF SERVICE SIGN, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-25 FOR DETAIL		EA	1
22	R12965023	R12965023	A0185	..SUPPORT		EA	1
23	R12965041	R12965041	A0185	...ARM		EA	1
24	R129650563	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002 - ATT.PT		EA	2
25	R129650564	DIA 0.19 UNI 7434	Z9009	...CIRCLIP - DIA 0.19 UNI 7434		EA	1
26	R12965040	R12965040	A0185	...SHEET		EA	1
27	R12965149	R12965149	A0185	...PIVOT		EA	1
28	R129650561	R129650561	A0185	…SPHERE-DIA0.23		EA	1
29	R129650562	R129650562	A0185	...SPRING-0.3x1.9x4.1		EA	1
30	R12430125	109391001	B0006	..LED DOOR OPEN LIGHT, INTERIOR - SEE FIG. 6-1 FOR NHA - 6-26 FOR DETAIL		EA	1
31	R12920367	R12920367	A0185	..BOX, LATCH		EA	1
32	R12965018	R12965018	A0185	..PLATE		EA	2
33	R1296503318	X-1255	34475	..LATCH, SPRING LOADED		EA	1

Door Covers Low Area (Fig. 2-64)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-064- 34	R1296503224	NO8-32UNC IFI 100	Z9009	..NUT, SELF-LOCKING - NO 8-32 - ATT.PT UNC IFI 100		EA	2
35	R1296503225	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL		EA	2
36	R1296503220	R1296503220	A0185	..GASKET-L=41.73		EA	1
37	R12965093	R12965093	A0185	..PLATE		EA	2
38	R1296503221	NO 6-32 UNCx1/2 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 6-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304		EA	6
39	R1296503222	NO 6 ANSI B27.2	Z9009	..WASHER, PLAIN - NO 6 ANSI - ATT.PT B27.2 - SSTL		EA	6
40	R1296503226	NO6ANSIB18.21.1	Z9009	..WASHER, SPRING - NO 6 ANSI - ATT.PT B18.21.1 -SSTL		EA	6
41	R1296503223	NO 6-32 UNC ANSI B18.2.2	Z9009	..NUT, HEX - NO 6-32 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	6
42	R12965138	R12965138	A0185	.GASKET		FT	13.2
43	R129650501	NO 8-32 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	8
44	R12965037	R12965037	A0185	.GUIDE, TAPE SWITCH		EA	2
45	R12965020	R12965020	A0185	.COVER, TYPE A1		EA	1
46	R129650204	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	6
47	R12354210	59660981	E0017	..MANUAL RELEASE ASSY - SEE FIG. 4-34 FOR DETAIL		EA	1
48	R12965024	R12965024	A0185	..GASKET		FT	3.3
49	R12965022	R12965022	A0185	..FIBERGLASS		EA	1
50	R12965030	R12965030	A0185	.COVER, TYPE B2		EA	1
51	R12354222	59631343	E0017	..PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
52	R129650305	NO 10-24 UNCx1-1/4 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx1-1/4 ANSI B18.3-SSTL AISI 304		EA	6
53	R12354220	59641346	E0017	..CREW KEY SWITCH ASSY, INSIDE - SEE FIG. 4-36 FOR DETAIL		EA	1
54	R129650304	NO 10-24 UNCx5/8 ANSI B18.3b	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx5/8 ANSI B18.3		EA	4
55	R12965148	R12965148	A0185	..GASKET		FT	3.3
56	R12965132	R12965132	A0185	..FIBERGLASS		EA	1
57	R12354209	59930324	E0017	.SHROUD, MANUAL RELEASE		EA	1
58	R1296505013	NO 8-32 UNCx3/4 ANSI B18.6.4e4S	Z9009	.SCREW, TAPPING, PAN HD - ATT.PT TYPE II REC - NO 8-32 UNCx3/4 ANSI B18.6.4 - SSTL AISI 304A		EA	9
59	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

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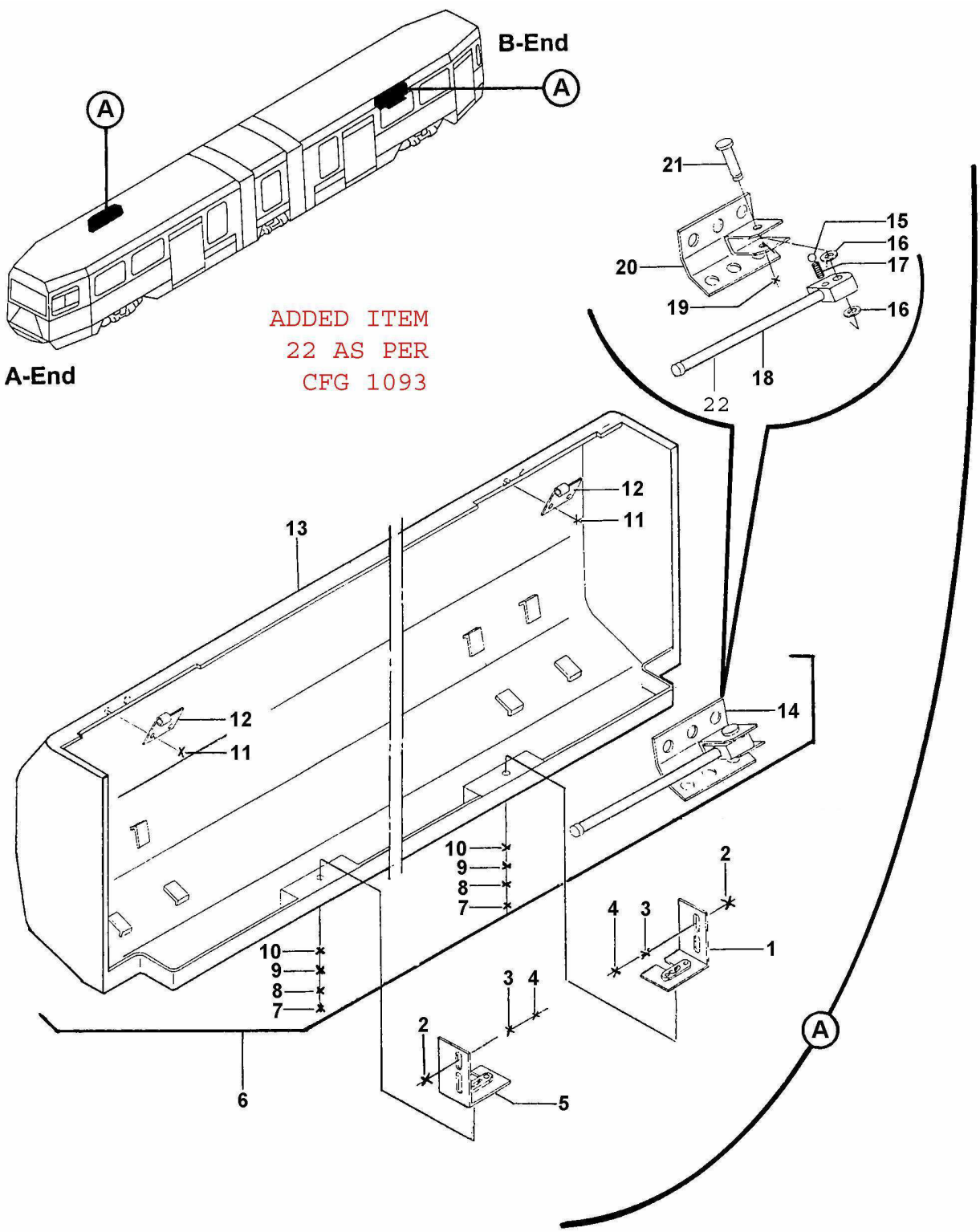


Figure 2-65 Destination Sign Covers LH Assembly

Destination Sign Covers LH Assembly (Fig. 2-65)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-065-	R12965001	R12965001	A0185	DESTINATION SIGN COVERS LH ASSEMBLY		EA	1
1	R12965086	R12965086	A0185	.BRACKET		EA	2
2	R129650193	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
3	R129650192	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	4
4	R129650191	NO 8-32 UNCx5/8 ANSI B18.2.1cS	Z9009	.SCREW, HEX - NO 8-32 - ATT.PT UNCx5/8 ANSI B18.2.1 - SSTL AISI 304A		EA	4
5	R12965087	R12965087	A0185	.BRACKET		EA	2
6	R12965011	R12965011	A0185	.SIGN COVER, LH		EA	2
7	R129651408	85-78-400-20	B0005	..PIVOT		EA	2
8	R1296514010	14-18-150-24	B0005	..SPRING		EA	2
9	R129651409	85-46-103-39	B0005	..WASHER		EA	2
10	R1296514011	85-34-301-12	B0005	..RETAINER		EA	2
11	R129651404	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	6
12	R12965090	R12965090	A0185	..HINGE		EA	2
13	R12965088	R12965088	A0185	..FIBERGLASS		EA	1
14	R12965014	R12965014	A0185	..POLE		EA	1
15	R129650561	R129650561	A0185	…SPHERE-DIA0.23		EA	1
16	R129650563	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002		EA	2
17	R129650562	R129650562	A0185	...SPRING-0.3x1.9x4.1		EA	1
18	R12965041	R12965041	A0185	...ARM		EA	1
19	R129650564	DIA 0.19 UNI 7434	Z9009	...CIRCLIP - DIA 0.19 UNI 7434		EA	1
20	R12965023	R12965023	A0185	...SUPPORT		EA	1
21	R12965149	R12965149	A0185	...PIVOT - DIA 0.23 - AISI 304L		EA	1
22	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

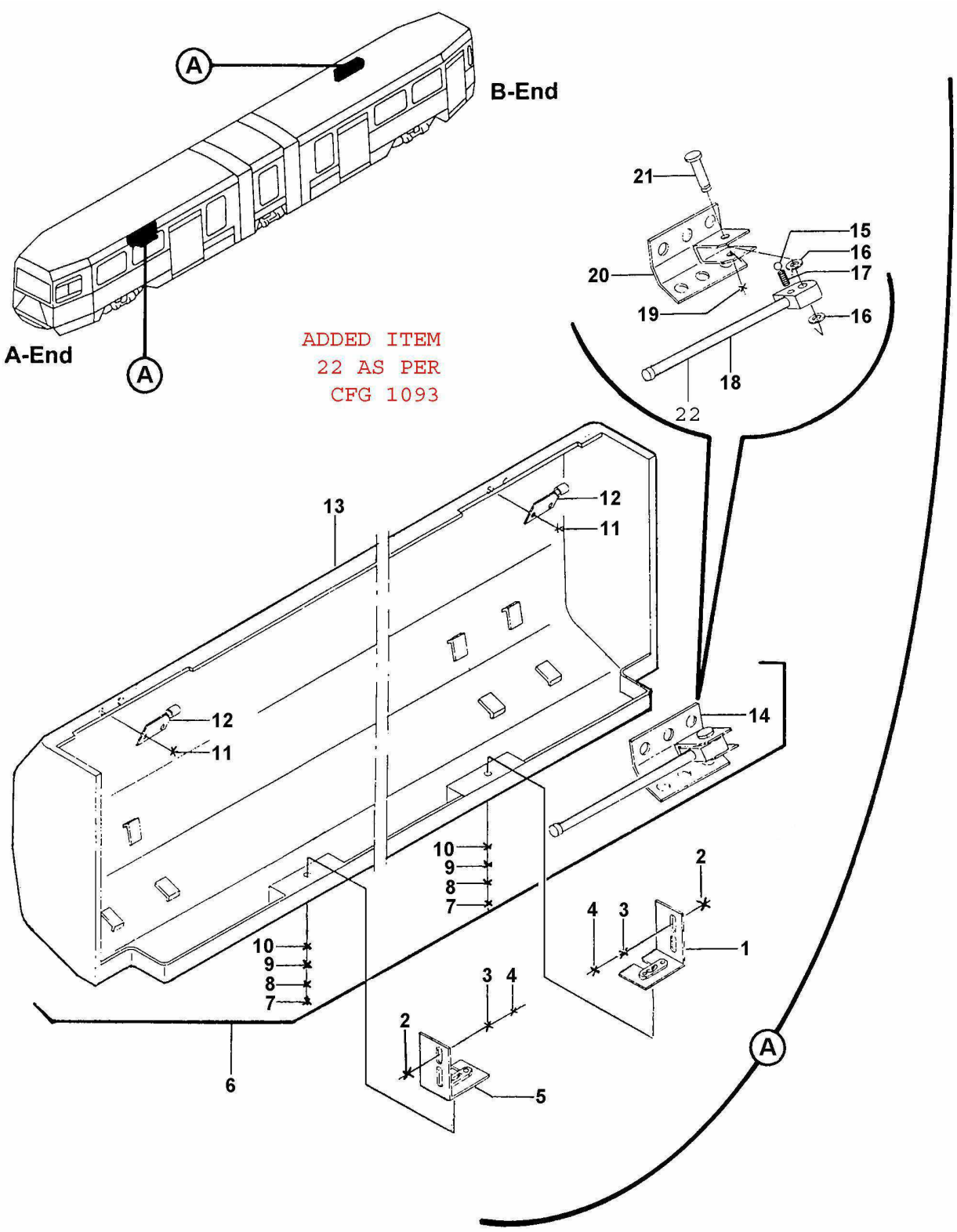


Figure 2-66 Destination Sign Covers RH Assembly

Destination Sign Covers RH Assembly (Fig. 2-66)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-066-	R12965001	R12965001	A0185	DESTINATION SIGN COVERS RH ASSEMBLY		EA	1
1	R12965086	R12965086	A0185	.BRACKET		EA	2
2	R129650193	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
3	R129650192	NO 8 ANSI B27.2 - S	Z9009	.WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	4
4	R129650191	NO 8-32 UNCx5/8 ANSI B18.2.1cS	Z9009	.SCREW, HEX - NO 8-32 - ATT.PT UNCx5/8 ANSI B18.2.1 - SSTL AISI 304A		EA	4
5	R12965087	R12965087	A0185	.BRACKET		EA	2
6	R12965012	R12965012	A0185	.SIGN COVER, RH		EA	2
7	R129651408	85-78-400-20	B0005	..PIVOT		EA	2
8	R1296514010	14-18-150-24	B0005	..SPRING		EA	2
9	R129651409	85-46-103-39	B0005	..WASHER		EA	2
10	R1296514011	85-34-301-12	B0005	..RETAINER		EA	2
11	R129651404	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	6
12	R12965091	R12965091	A0185	..HINGE		EA	2
13	R12965088	R12965088	A0185	..FIBERGLASS		EA	1
14	R12965014	R12965014	A0185	..POLE		EA	1
15	R129650561	R129650561	A0185	…SPHERE-DIA0.23		EA	1
16	R129650563	0.2 x 0.66 THK 0.002	Z9009	...WASHER - 0.2 x 0.66 THK 0.002		EA	2
17	R129650562	R129650562	A0185	...SPRING-0.3x1.9x4.1		EA	1
18	R12965041	R12965041	A0185	...ARM		EA	1
19	R129650564	DIA 0.19 UNI 7434	Z9009	...CIRCLIP - DIA 0.19 UNI 7434		EA	1
20	R12965023	R12965023	A0185	...SUPPORT		EA	1
21	R12965149	R12965149	A0185	...PIVOT - DIA 0.23 - AISI 304L		EA	1
22	573202042	573202042		HEAT SHRINK 1/2" RAYCHEM # ZH-100-1/2"-0			AR

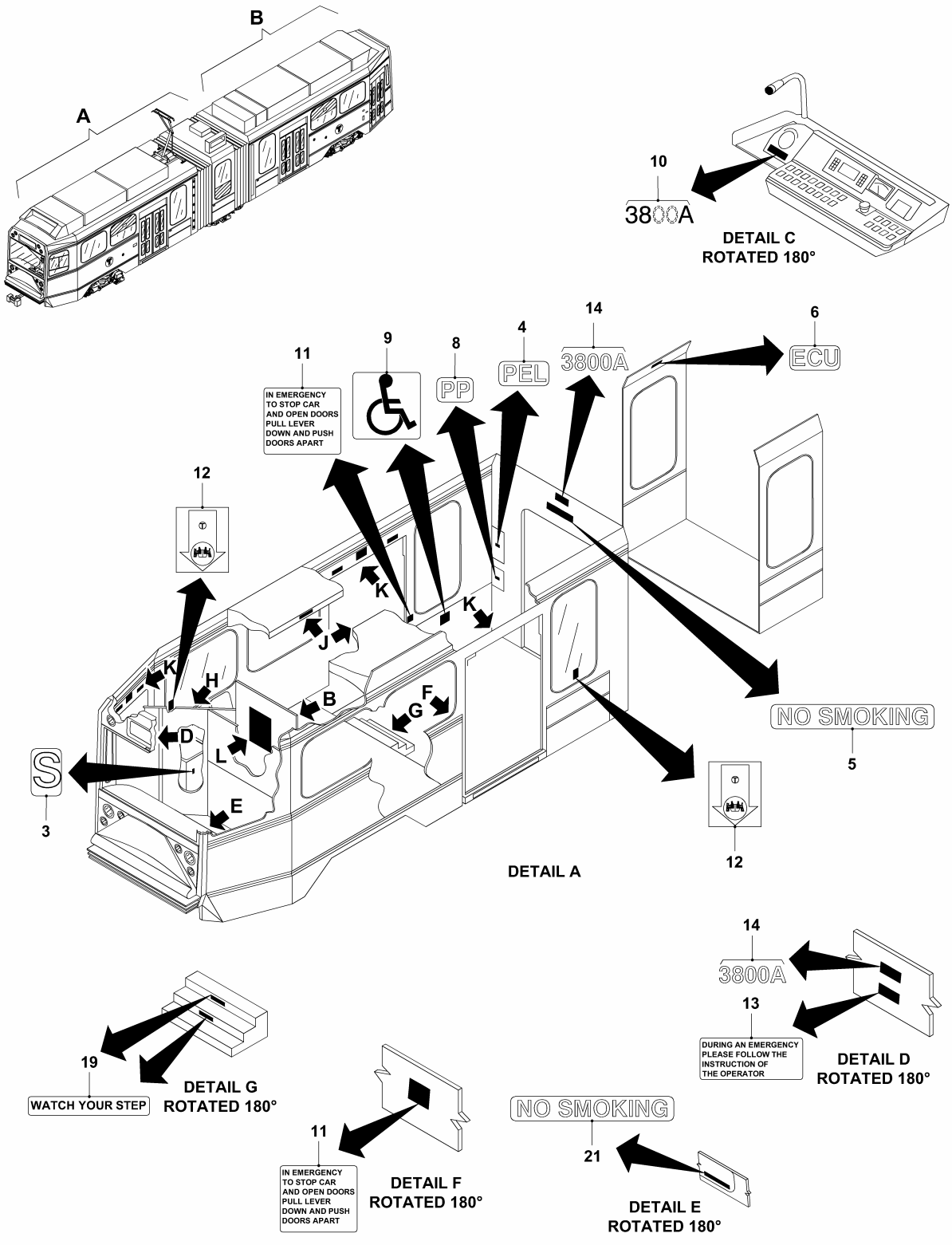


Figure 2-67 Interior Decals Arrangement (Sheet 1 of 3)

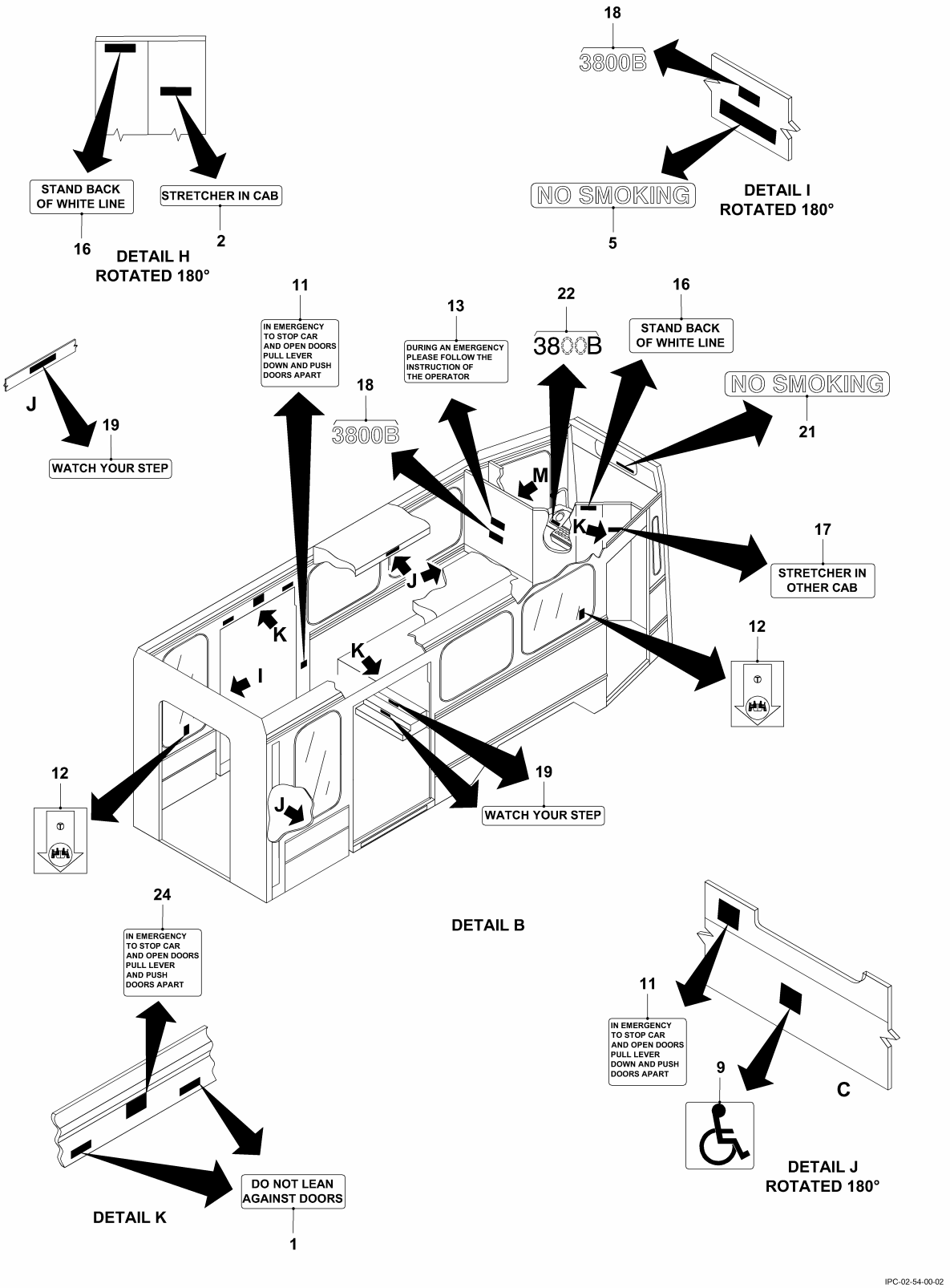
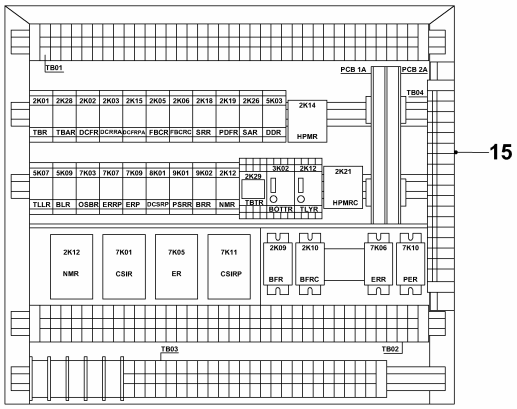
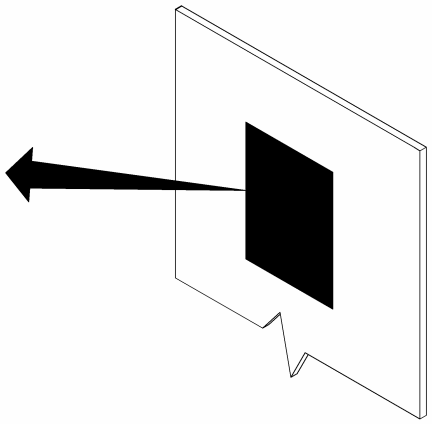


Figure 2-67 Interior Decals Arrangement (Sheet 2 of 3)

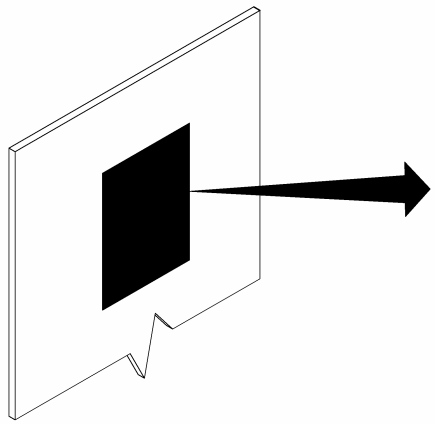
FULL NAME	MBTA	BCF
BRAKE FAULT RELAY A	BFRA	2K09
BRAKE FAULT RELAY C	BFRC	2K10
BRAKE LIGHT RELAY A	BLRA	5K09
BATTERY OVERTEMP TIMING RELAY	BOTTR	3K02
BRIDGEPLATE REQUEST RELAY	BRRA	9K02
CAB STATION INTERLOCK RELAY	CSIRA	7K01
CAB STATION INTERLOCK RELAY REPEATER	CSIRPA	7K11
DIRECTION CONTROL FORWARD RELAY A	DCFRA	2K02
DIRECTION CONTROL FWD RELAY REPEATER A	DCFRPA	2K15
DIRECTION CONTROL REVERSE RELAY A	DCRRA	2K03
DOOR CLOSED SUMMARY RELAY REPEATER	DCSRPA	8K01
DOOR DISEMBARKING RELAY A	DDRA	5K03
EMERGENCY RELAY	ER	7K05
EMERGENCY RELAY REPEATER	ERP	7K09
EMERGENCY RESET RELAY A	ERRA	7K06
EMERGENCY RESET RELAY REPEATER A	ERRPA	7K07
FRICTION BRAKE CUTOUT RELAY A	FBCRA	2K05
FRICTION BRAKE CUTOUT RELAY C	FBCRC	2K06
HYDRAULIC PUMP MOTOR RELAY A	HPMRA	2K14
HYDRAULIC PUMP MOTOR RELAY C	HPRMC	2K21
NO-MOTION RELAY	NMR	2K12
OPERATE-STANDBY RELAY	OSBRA	7K03
PROPULSION-DYNAMIC FAULT RELAY A	PDFRA	2K17
PASSENGER EMERGENCY RELAY	PER	7K10
PASSENGER STOP RELAY	PSRRA	9K01
SANDER AUXILIARY RELAY	SAR	2K26
SPEED RESTRICTION RELAY A	SRRA	2K18
TRACK BRAKE AUXILIARY RELAY	TBAR	2K28
TRACK BRAKE RELAY	TBR	2K01
TRACK BRAKE CONTACTOR A	TBCA	2K22
TRACK BRAKE CONTACTOR B	TBCB	2K23
TRACK BRAKE TIMING RELAY	TBTR	2K29
TURN LIGHTS LEFT RELAY	TLLR	5K07
WINDSHIELD HEATER RELAY A	WHRA	6K06
LAY UP TIMING RELAY	TLYR	2K17





DETAIL L
ROTATED 180°

FULL NAME	MBTA	BCF
BATTERY CHARGER REPLAY	BCR	5K11
BRAKE FOULT RELAY B	BFRB	2K09
BRAKE INTERLOCK BYPASS RELAY	BIBPR	2K07
BRAKE LIGHT RELAY B	BLRB	5K09
BRIDGEPLATE REQUEST RELAY	BRRB	9K02
CAB STATION INTERLOCK RELAY	CSIRB	7K01
CAB STATION INTERLOCK RELAY REPEATER	CSIRPB	7K11
DIRECTION CONTROL FORWARD RELAY A	DCFRB	2K02
DIRECTION CONTROL FORWARD RELAY A	DCFRB	2K02
DIRECTION CONTROL FORWARD RELAY B	DCRRB	2K16
DOOR CLOSED SUMMARY RELAY REPEATER	DCSRPB	8K01
DOOR DISEMBARKING FLASHER RELAY	DDFR	5K02
DOOR DISEMBARKING RELAY B	DDBR	5K03
DOOR CLOSED AUXILIARY SUMMARY RELAY	DCSAR	8K12
DOOR CLOSED BYPASS RELAY	DCBPR	2K27
DOOR CLOSED SUMMARY RELAY	DCSR	8K11
EMERGENCY RESET RELAY B	ERRB	7K06
EMERGENCY RESET RELAY REPEATER B	ERRPB	7K07
FRICTION BRAKE CUTOUT RELAY B	FBCRB	2K05
FRICTION BRAKE FAULT RELAY	FBFR	2K30
GENERAL BY-PASS CUTOUT RELAY	GBCR	7K08
HYDRAULIC PUMP MOTOR RELAY B	HPMRB	2K14
INTERIOR EMERGENCY LIGHTS RELAY	IELR	5K10
INTERIOR LIGHTS TIMING RELAY	ILTR	5K12
OPERATOR'S SILENT ALARM RELAY	OSAR	9K03
OPERATE-STANDBY RELAY	OSBRB	7K03
PROPULSION-DYNAMIC FAULT RELAY B	PDFRB	2K19
PASSENGER STOP RELAY B	PSRRB	9K01
PROPULSION-BRAKE INHIBIT RELAY	PBIR	2K08
SPEED RESTRICTION RELAY B	SRRB	2K18
TURN LIGHTS FLASHER RELAY	TLFR	5K06
TURN LIGHTS RIGHT RELAY	TLLR	5K08
WINDSHIELD HEATER RELAY B	WHRB	6K06
LAY UP TIMING RELAY	TLYR	2K17



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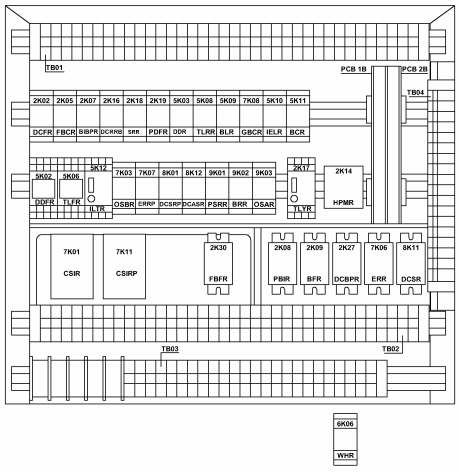


Figure 2-67 Interior Decals Arrangement (Sheet 3 of 3)

Interior Decals Arrangement (Fig. 2-67)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-067-	R12989001	R12989001	A0185	INTERIOR DECALS ARRANGEMENT		EA	1
1	R12989026	R12989026	A0185	.DECAL, 'DO NOT LEAN AGAINST DOORS'		EA	12
2	R12989061	R12989061	A0185	TAG, STRETCHER IN CAB		EA	1
3	R12989015	R12989015	A0185	.DECAL, SAND BOX 'S'		EA	2
4	R12989031	R12989031	A0185	.DECAL, PANTOGRAPH EMERGENCY LOWER 'PEL'		EA	1
5	R12989024	R12989024	A0185	.DECAL, 'NO SMOKING'		EA	4
6	R12989029	R12989029	A0185	.DECAL, ELECTRONIC CONTROL UNIT 'ECU'		EA	1
7				DELETED			
8	R12989028	R12989028	A0185	.DECAL, PANTOGRAPH PUMP 'PP'		EA	1
9	R12989012	R12989012	A0185	.DECAL, HANDICAP		EA	2
10	R12989021	R12989021	A0185	.DECAL, CAR NUMBERS		EA	1
11	R12989023	R12989023	A0185	.DECAL, 'IN EMERGENCY TO STOP CAR AND OPEN DOORS'		EA	4
12	R12989063	R12989063	A0185	TAG, HANDICAPPED SEAT		EA	4
13	R12989025	R12989025	A0185	.DECAL, 'DURING AN EMERGENCY PLEASE FOLLOW...'		EA	2
14	R12989019	R12989019	A0185	.DECAL, CAR NUMBERS		EA	2
15	R12989150	R12989150	A0185	.DECAL, LABEL RELAY PANEL, A BODY		EA	1
16	R12989027	R12989027	A0185	.DECAL, 'STAND BACK OF WHITE LINE'		EA	2
17	R12989062	R12989062	A0185	TAG, STRETCHER IN OTHER CAB		EA	1
18	R12989020	R12989020	A0185	.DECAL, CAR NUMBERS		EA	2
19	R12989060	R12989060	A0185	TAG, WATCH YOUR STEP		EA	1
20	R12989151	R12989151	A0185	.DECAL, LABEL RELAY PANEL, B BODY		EA	1
21	R12989058	R12989058	A0185	TAG, NO SMOKING		EA	2
22	R12989022	R12989022	A0185	TAG, CAR NUMBER		EA	1
23				DELETED			
24	R12989059	R12989059	A0185	TAG, IN EMERGENCY TO STOP CAR AND OPEN DOORS		EA	6

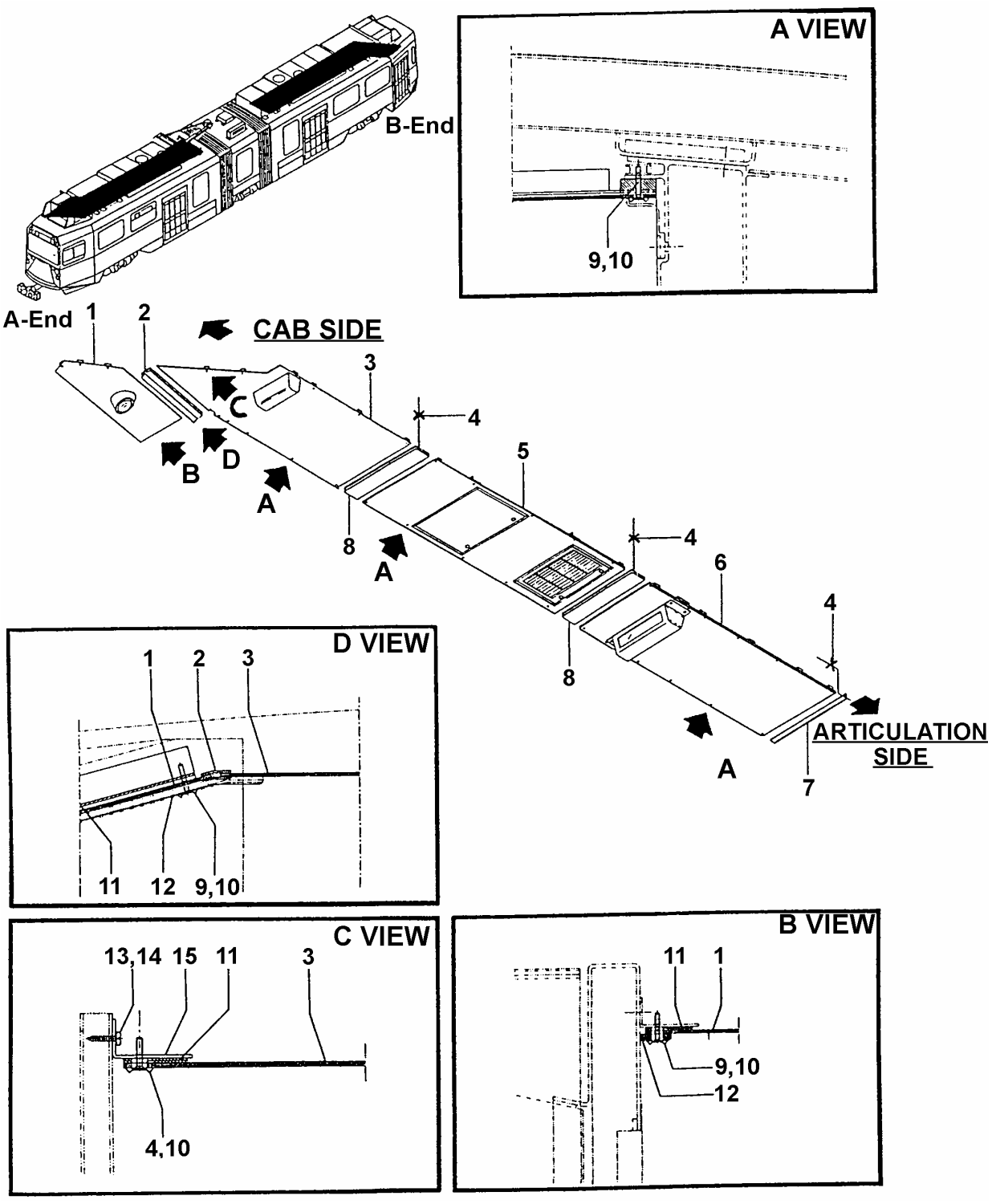


Figure 2-68 Ceiling Panels Installation

Ceiling Panels Installation (Fig. 2-68)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-068-	R12961001	R12961001	A0185	CEILING PANELS INSTALLATION		EA	1
1	R12961002	R12961002	A0185	.CEILING PANEL - SEE FIG. 2-69 FOR DETAIL		EA	2
2	R12961020	R12961020	A0185	.PROFILE		EA	2
3	R12961003	R12961003	A0185	.CEILING PANEL - SEE FIG. 2-70 FOR DETAIL		EA	2
4	R129610011	NO 8-32 UNCx1 ANSI B18.6.4d4N	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4-STLZNP		EA	32
5	R12961004	R12961004	A0185	.CEILING PANEL - SEE FIG. 2-71 FOR DETAIL		EA	2
6	R12961005	R12961005	A0185	.CEILING PANEL - SEE FIG. 2-72 FOR DETAIL		EA	2
7	R12961008	R12961008	A0185	TERMINAL JOINT		EA	2
8	R12961030	R12961030	A0185	.PROFILE		EA	4
9	R129610012	NO 8x1-1/8 ANSI B18.6.1 aS	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x1-1/8 ANSI B18.6.1 - SSTL AISI 304A		EA	721
10	R1296100117	UNI 6594-MS	Z9009	.WASHER - UNI 6594-MS - ATT.PT		EA	86'
11	R12961197	R12961197	A0185	.GASKET-0.787x0.118		FT	8.4
12	R12961239	R12961239	A0185	.FRAME		EA	2
13	R1296100118	NO 8x5/8 ANSI B18.6.1bS	Z9009	.SCREW, WOOD, PAN HD - NO - ATT.PT 8x5/8 ANSI B18.6.1 - SSTL AISI 304A		EA	20
14	R1296100114	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	20
15	R12920735	R12920735	A0185	.BRACKET		EA	10

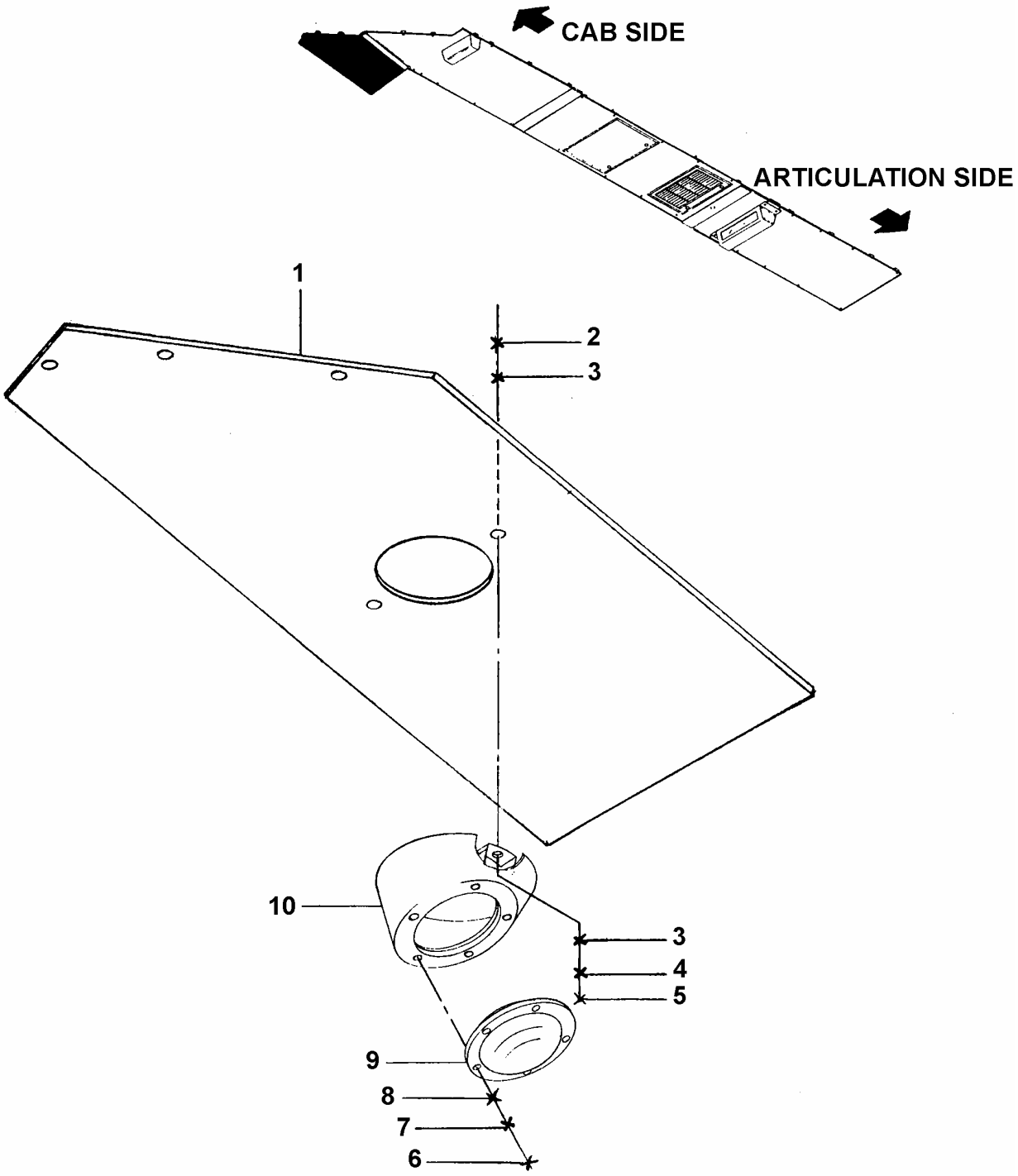


Figure 2-69 Ceiling Panel

Ceiling Panel (Fig. 2-69)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-069-	R12961002	R12961002	A0185	CEILING PANEL - SEE FIG. 2-68 FOR NHA		EA	1
1	R12961016	R12961016	A0185	.LAMINATE		EA	1
2	R129610021	NO 10-24 UNCx1 ANSI B18.2.1aS	Z9009	.BOLT, HEX-NO 10-24 UNCx1 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	2
3	R129610022	NO 10BANSIB27.2-S	Z9009	.WASHER, PLAIN TYPE B - NO - ATT.PT 10 B ANSI B27.2 - SSTL AISI 304		EA	4
4	R129610023	NO 10ANSIB27.1-S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
5	R129610024	NO 10-24 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX-NO 10-24 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	2
6	R129610026	NO 8-32 UNCx3/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX - NO 8-32 - ATT.PT UNCx3/4 ANSI B18.2.1 - SSTL AISI 304A		EA	5
7	R129610028	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	5
8	R129610027	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	5
9	R12495815	109272003	B0006	.DOME LIGHT - SEE FIG. 6-1 FOR NHA - 6-13 FOR DETAIL		EA	1
10	R12961019	R12961019	A0185	.BULB SOCKET		EA	

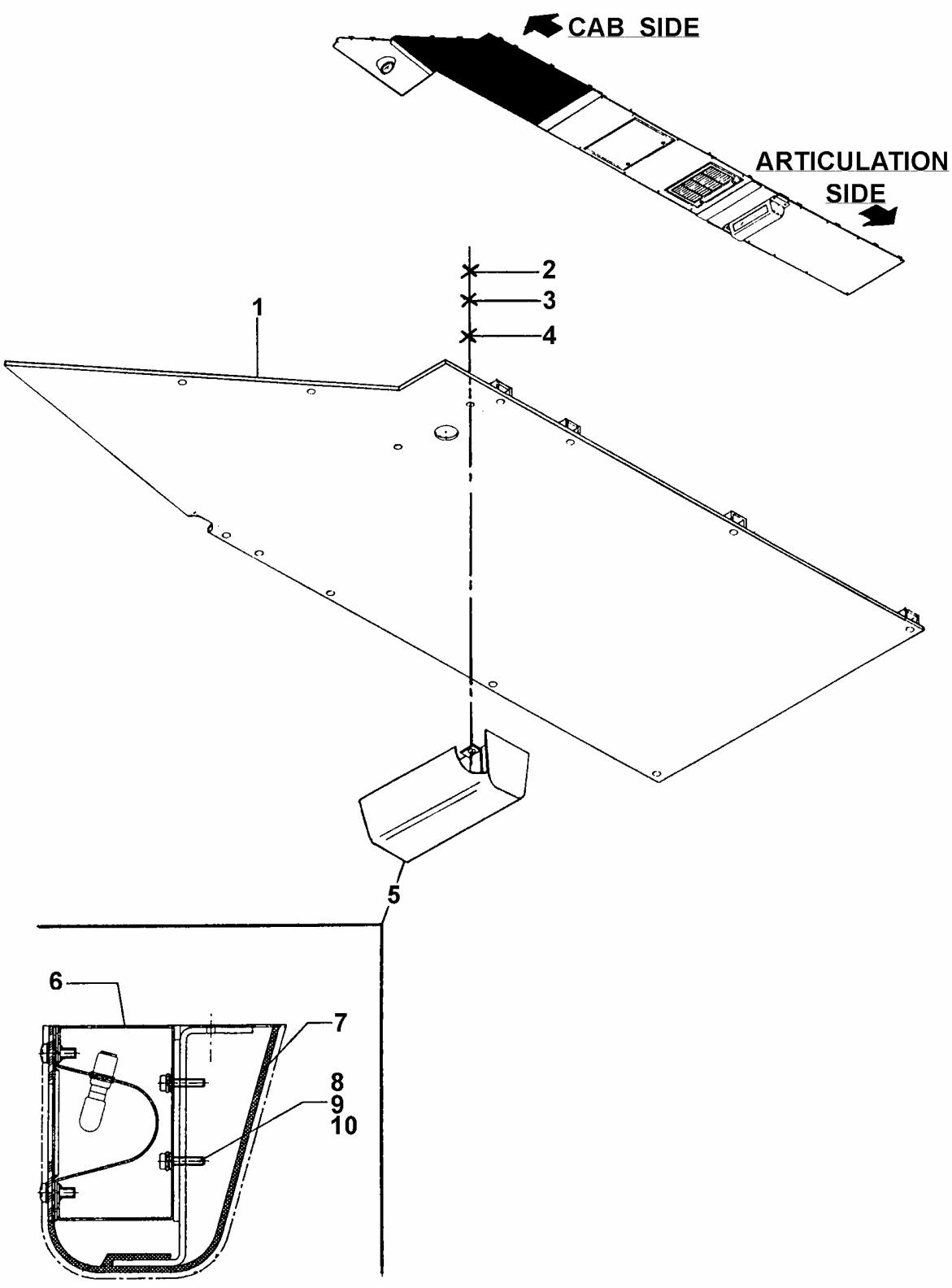
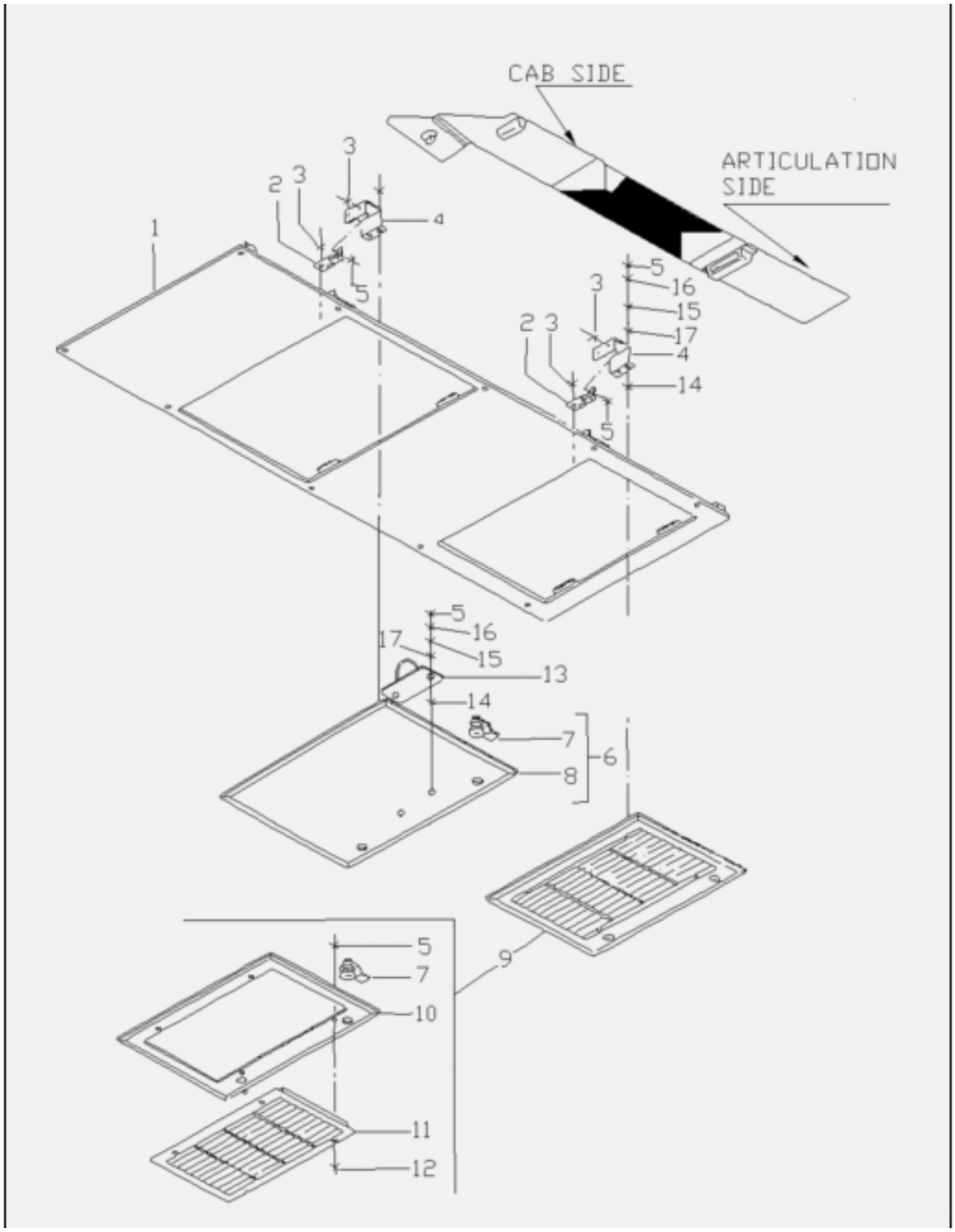


Figure 2-70 Ceiling Panel

Ceiling Panel (Fig. 2-70)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-070-	R12961003	R12961003	A0185	CEILING PANEL - SEE FIG. 2-68 FOR NHA		EA	1
1	R12961026	R12961026	A0185	.LAMINATE		EA	1
2	R129610031	NO 10-24 UNCx1 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 10-24 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	2
3	R129610032	NO 10 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
4	R129610033	NO 10BANSIB27.2-S	Z9009	.WASHER, PLAIN TYPE B - NO - ATT.PT 10 B ANSI B27.2 - SSTL AISI 304		EA	2
5	R12961067	R12961067	A0185	.STOP REQUEST SIGN INSTALLATION		EA	1
6	R12430130	109399001	B0006	..STOP REQUEST SIGN - SEE FIG. 6-24 FOR DETAIL - 6-1 FOR NHA		EA	1
7	R12961024	R12961024	A0185	..FIBERGLASS		EA	1
8	R129610674	NO 10-24 UNCx1 ANSI B18.6.3cS	Z9009	..SCREW, MACHINE, PAN HD - - ATT.PT NO 10-24 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	4
9	R129610676	NO 10ANSIB27.1-S	Z9009	..WASHER, HEL SPRING - NO - ATT.PT 10 ANSI B27.1 -SSTLAISI 302		EA	4
10	R129610675	NO 10BANSIB27.2-S	Z9009	..WASHER, PLAIN TYPE B - NO - ATT.PT 10 B ANSI B27.2 - SSTL AISI 304		EA	4



NOTE: Items 13 thru 18 added.

Figure 2-71 Ceiling Panel

Ceiling Panel (Fig. 2-71)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-071-	R12961004	R12961004	A0185	CEILING PANEL - SEE FIG. 2-68 FOR NHA		EA	1
1	R12961029	R12961029	A0185	.LAMINATE		EA	1
2	R12965061	R12965061	A0185	.HINGE, RIGHT		EA	4
3	R129610043			DELETED			
4	R12961034	R12961034	A0185	.BRACKET		EA	4
5	R129610042	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	12
6	R12961213	R12961213	A0185	.DOOR		EA	1
7	R129612131	E5-2-011-010	B0005	..LOCK		EA	2
8	R12961032	R12961032	A0185	..PANEL		EA	1
9	R12961214	R12961214	A0185	.DOOR		EA	1
10	R12961039	R12961039	A0185	..PANEL		EA	1
11	R12961042	R12961042	A0185	..GRID		EA	1
12	R129612144	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	..SCREW, MACHINE, FLAT - ATT.PT CTSK HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	4
13	R12961007	R12961007		STRIKER			2
14	R1296100408	N8, ANSI B27.1-1965, AISI 302		COUNTERSUNK WASHER,N8, ANSI B27.1-1965, AISI 302			12
15	R1296100409	SIZE 8 STC-S14		FLAT WASHER, Size 8, STC 514, Type N			12
16	R1296100410			HEX NUT,8" UNC, IFI REFEREMENT-1970, AISI 304			12
17	R1296100411	8 X 1"-UNC-1A ANSI B 18.6.3-1970		F.C.H SCREW, 8 X 1"-UNC-1A ANSI B 18.6.3-1970, AISI 304A			12
18				LOCK WASHER N8,STC 515,TYPE S			12

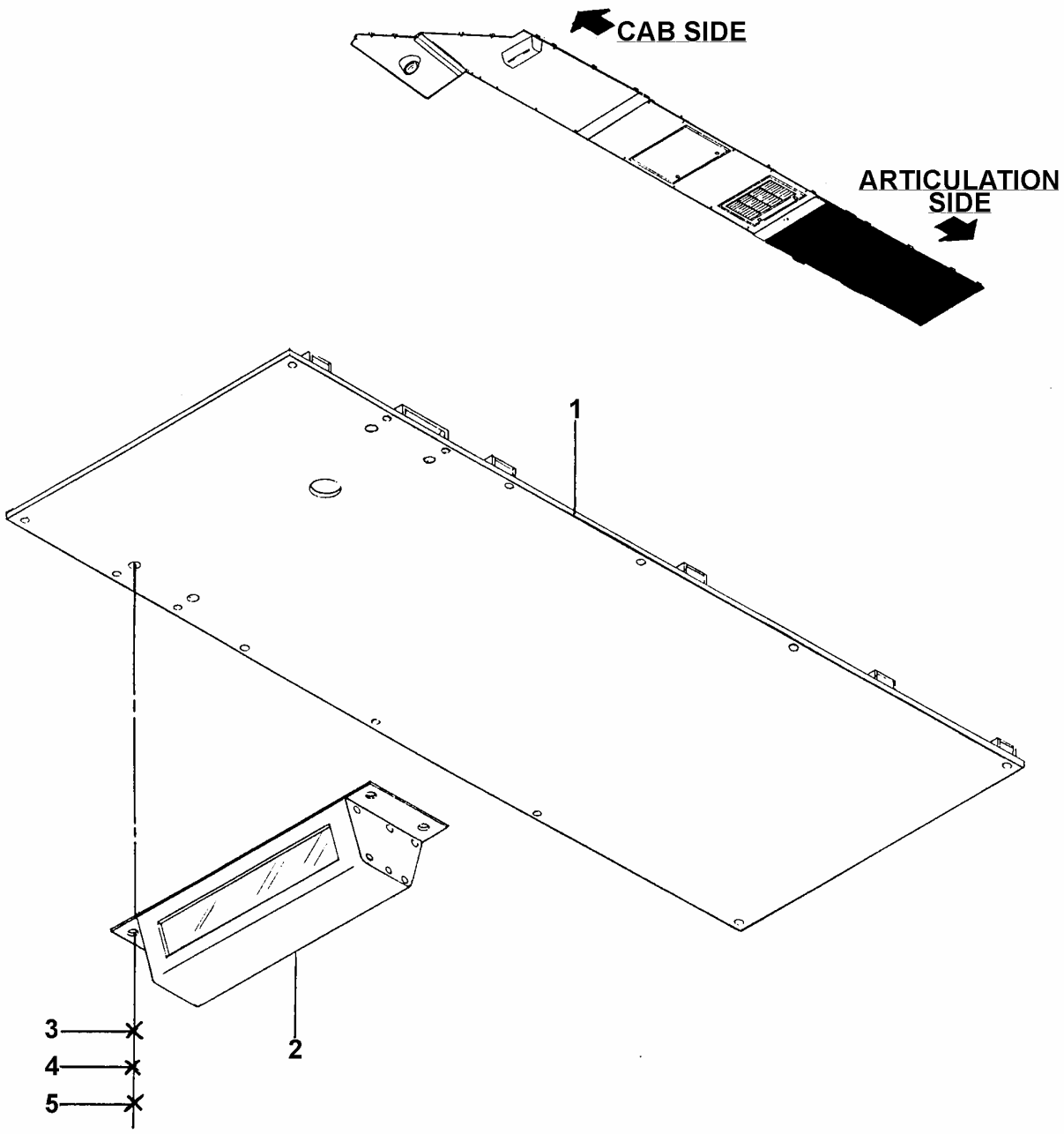


Figure 2-72 Ceiling Panel

Ceiling Panel (Fig. 2-72)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-072-	R12961005	R12961005	A0185	CEILING PANEL - SEE FIG. 2-68 FOR NHA		EA	1
1	R12961046	R12961046	A0185	.LAMINATE		EA	1
2	R12430120	510436001	B0006	.SIGN, INTERNAL MESSAGE DISPLAY - SEE FIG. 13-9 FOR DETAIL		EA	1
3	R129610052	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	4
4	R129610053	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
5	R129610051	NO 8-32 UNCx5/8 ANSI	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT		EA	4
		B18.6.3c3S		TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A			

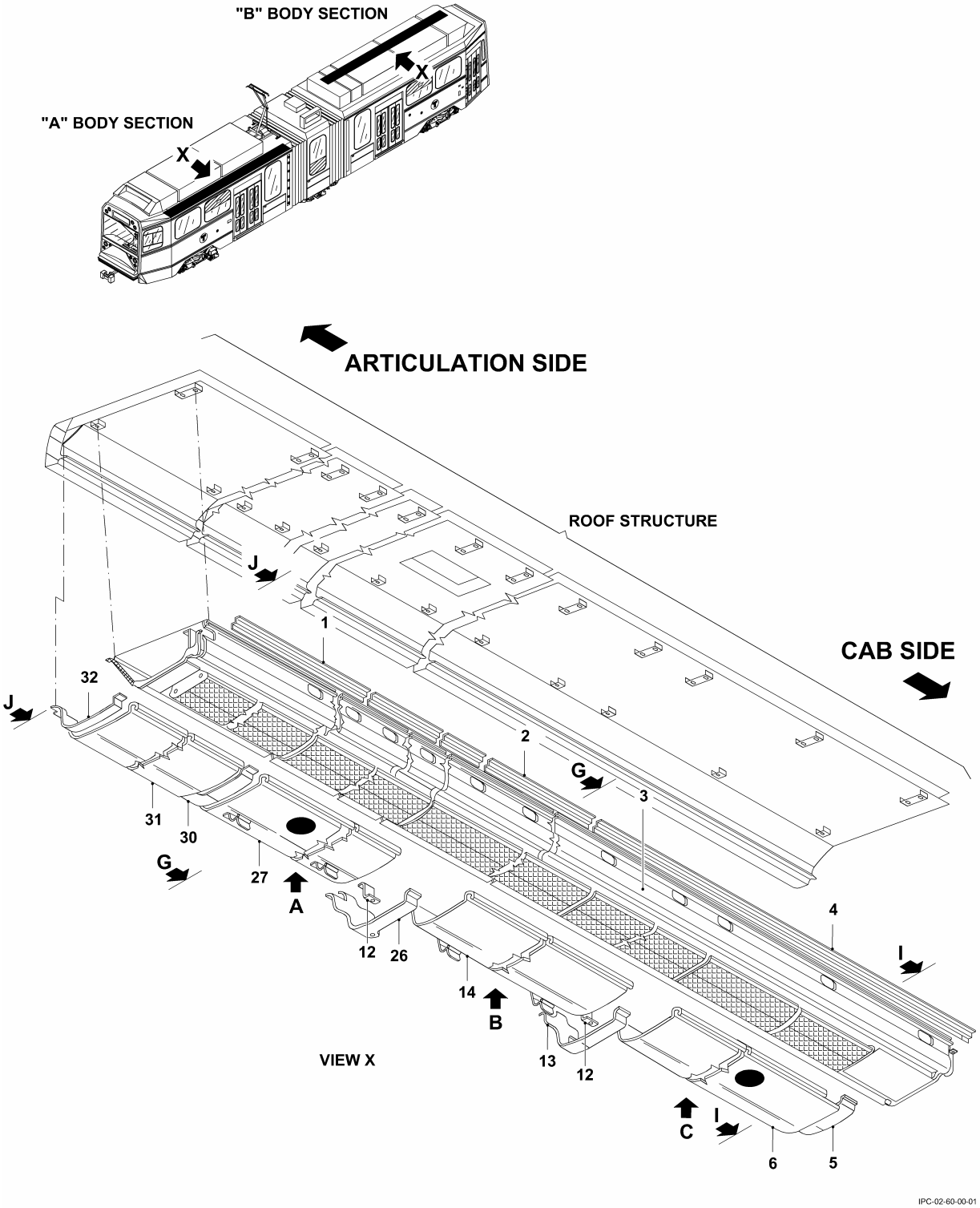


Figure 2-73 Air Ducts Assy, Installation (Sheet 1 of 6)

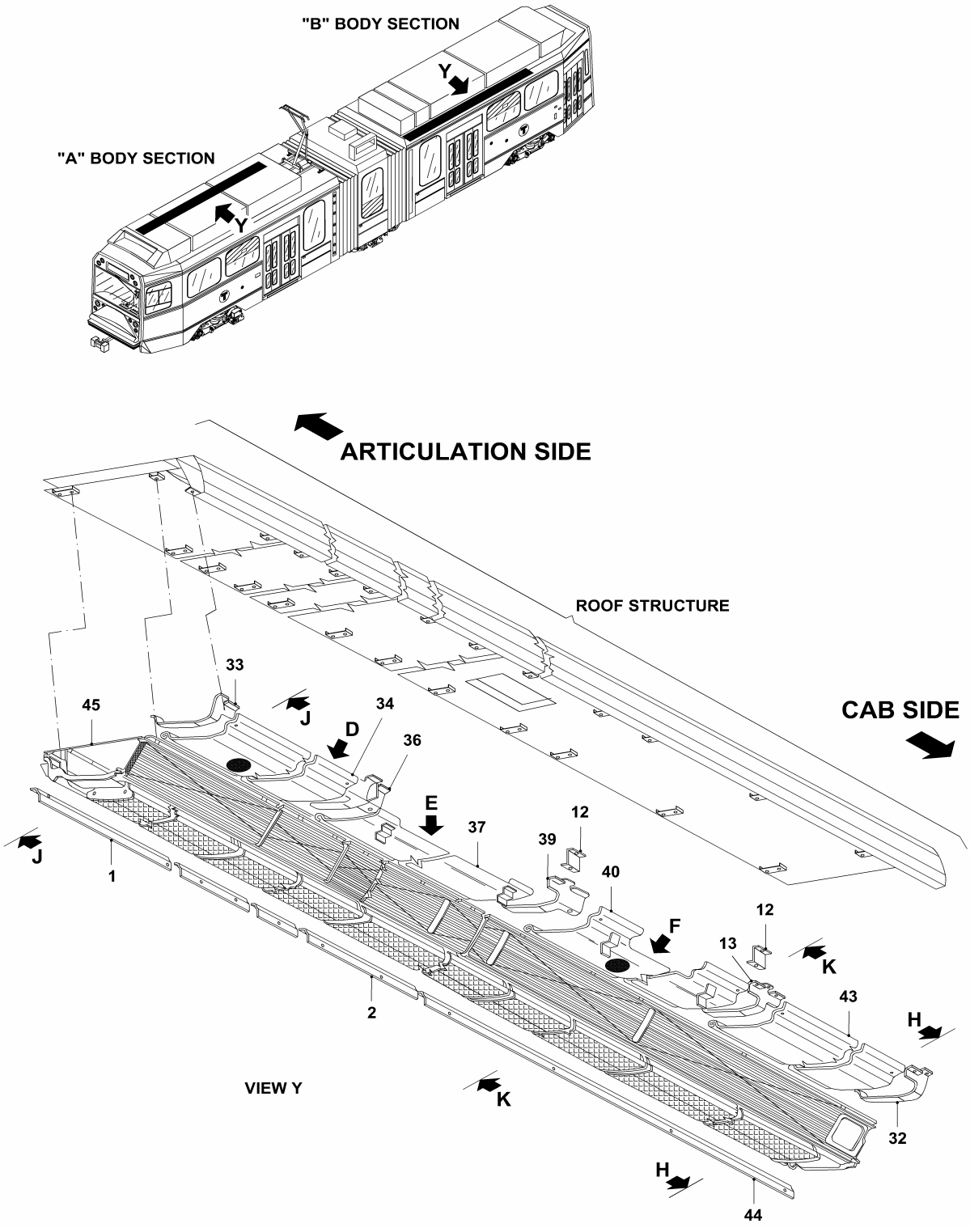


Figure 2-73 Air Ducts Assy, Installation (Sheet 2 of 6)

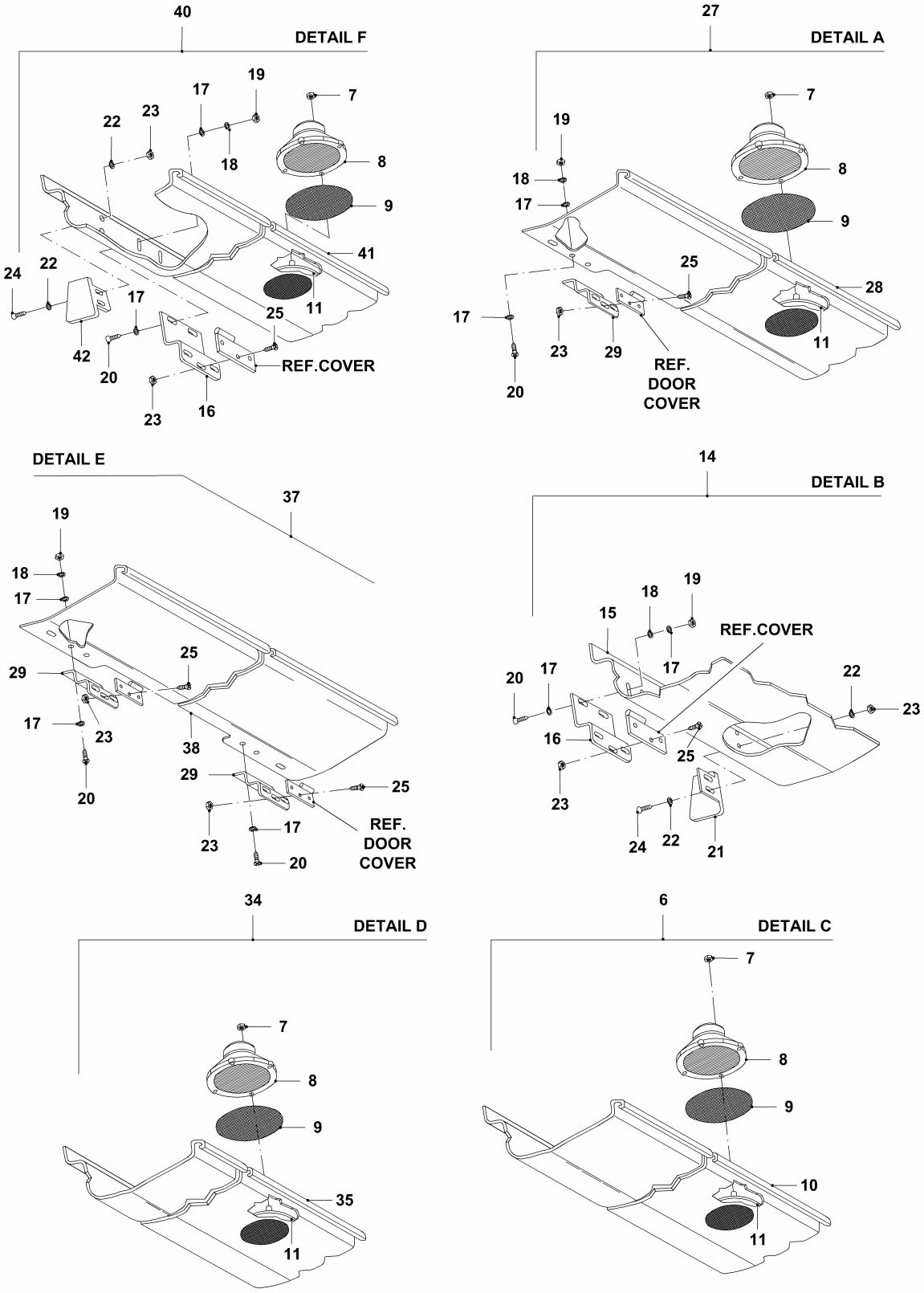


Figure 2-73 Air Ducts Assy, Installation (Sheet 3 of 6)

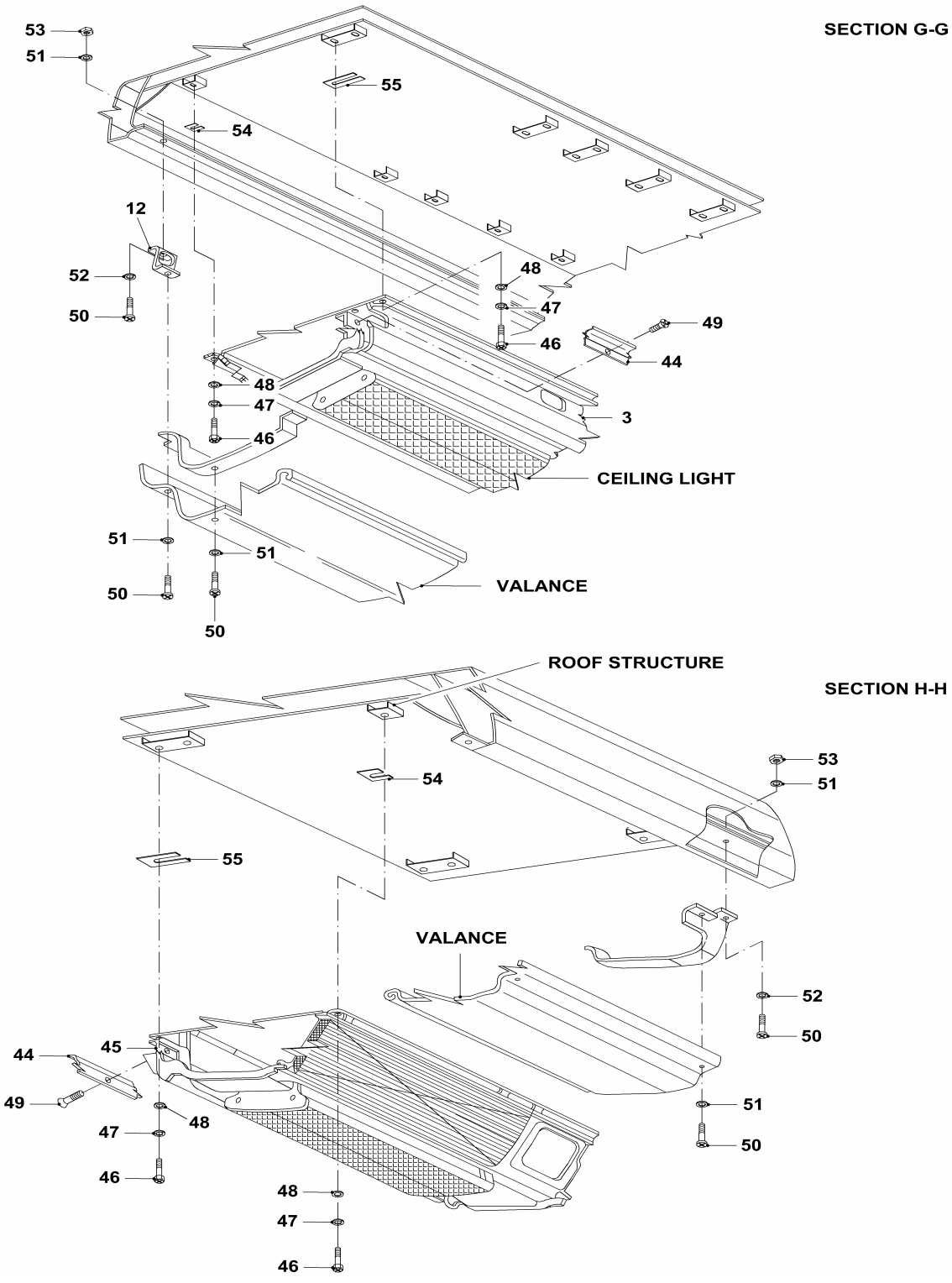


Figure 2-73 Air Ducts Assy, Installation (Sheet 4 of 6)

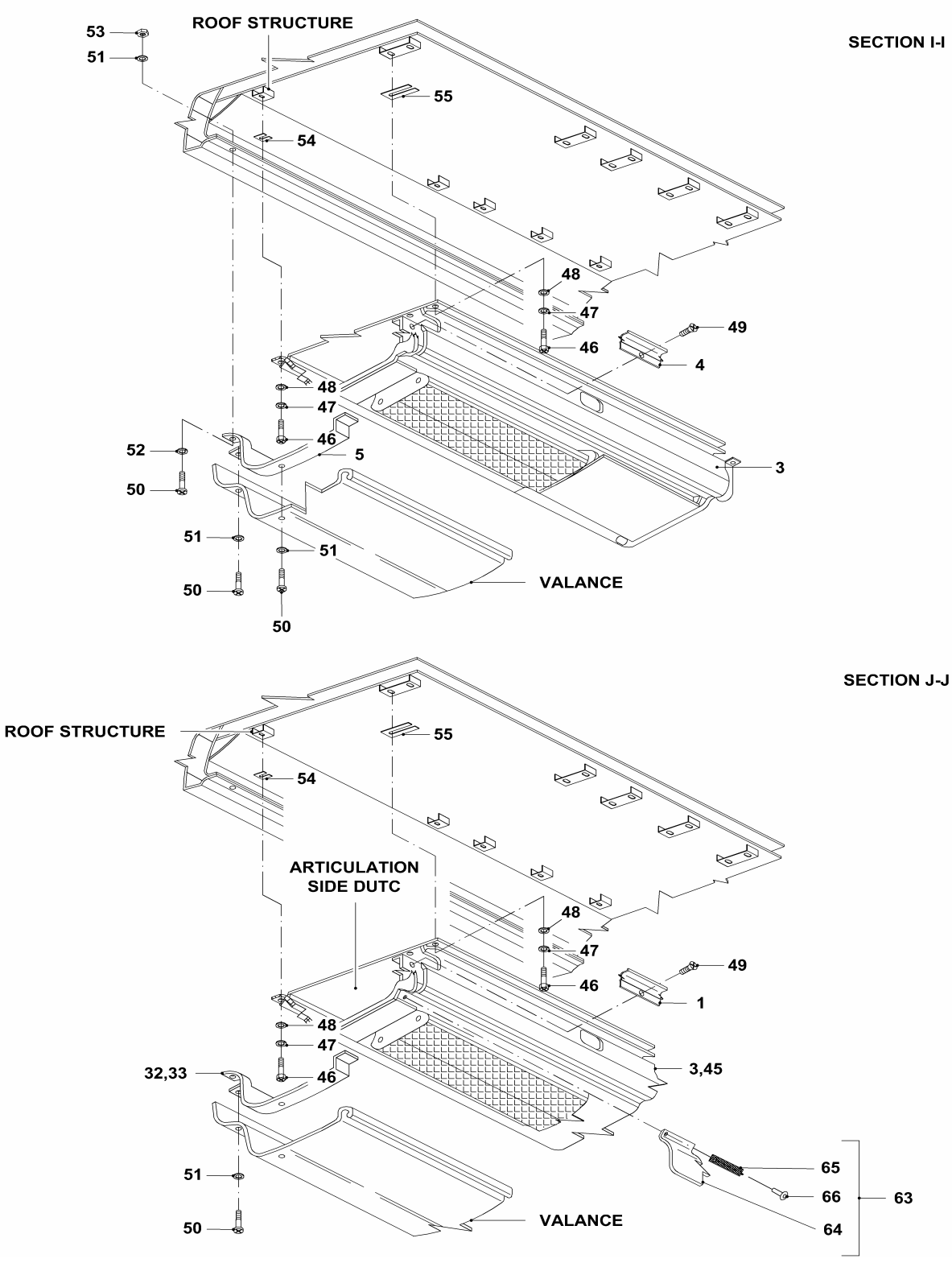


Figure 2-73 Air Ducts Assy, Installation (Sheet 5 of 6)

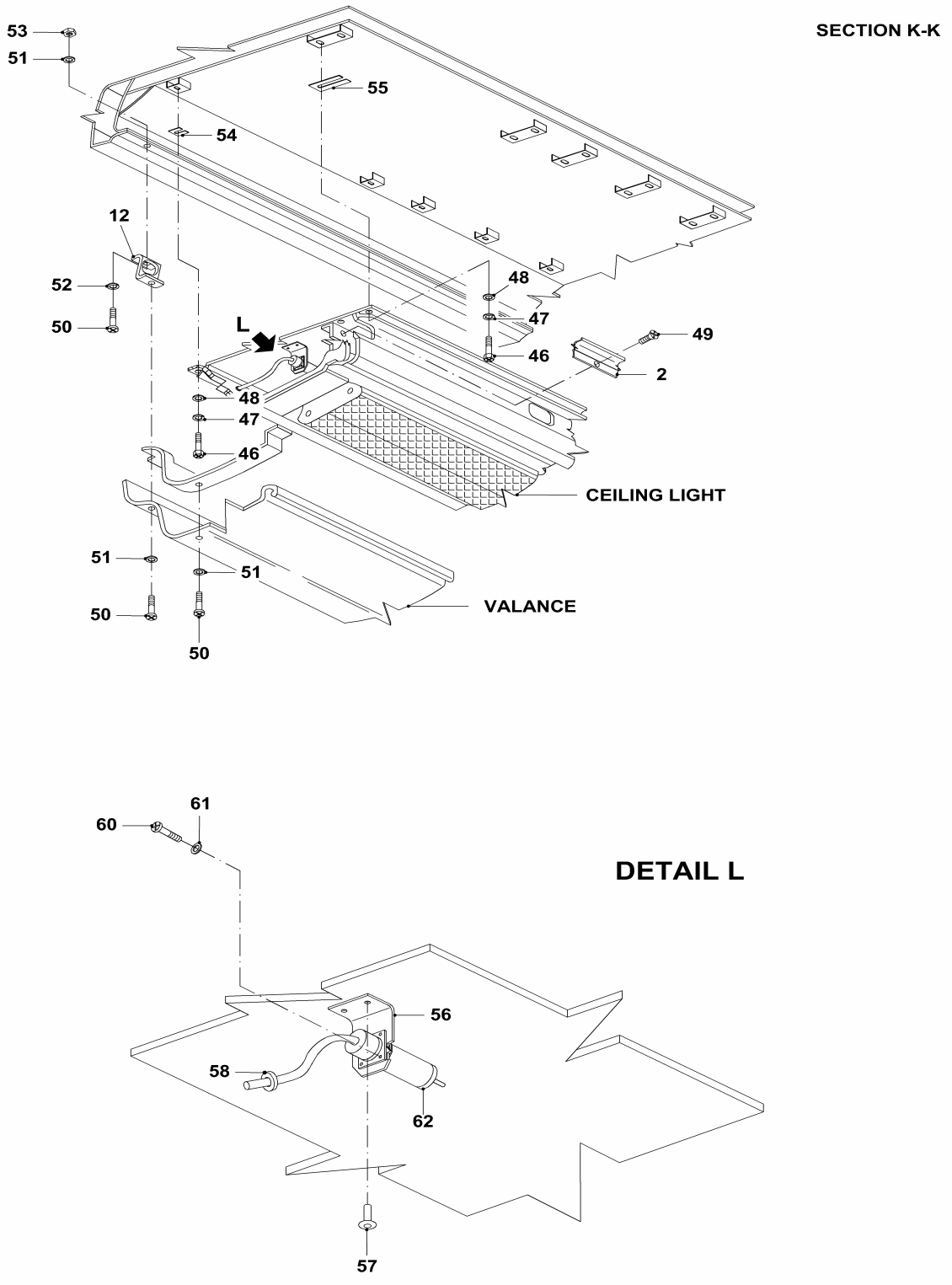


Figure 2-73 Air Ducts Assy, Installation (Sheet 6 of 6)

Air Ducts Assy, Installation (Fig. 2-73)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-073-	R12634001	R12634001	A0185	AIR DUCTS ASSY, INSTALLATION - SEE FIG. 5-1 FOR NHA		EA	1
1	R12634158	R12634158	A0185	.PROTECTION, WIRE		EA	4
2	R12634111	R12634111	A0185	.PROTECTION, WIRE		EA	4
3	R12634004	R12634004	A0185	.AIR DUCT, LEFT - SEE FIG. 2-74 FOR DETAIL		EA	2
4	R12634112	R12634112	A0185	.PROTECTION, WIRE		EA	2
5	R12634188	R12634188	A0185	.HANGER		EA	2
6	R12634009	R12634009	A0185	.VALANCE		EA	2
7	R126341797	NO 10-24 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 10-24 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
8	R12466107	N840-5310-001	B0023	..SPEAKER, INTERNAL (A14) - SEE FIG. 12-1 FOR NHA		EA	1
9	R12961100	R12961100	A0185	..PUNCHED PLATE		EA	1
10	R12634139	R12634139	A0185	..VALANCE		EA	1
11	R12961099	R12961099	A0185	..SUPPORT, SPEAKER		EA	1
12	R12634170	R12634170	A0185	.HANGER		EA	8
13	R12634185	R12634185	A0185	.HANGER		EA	4
14	R12634021	R12634021	A0185	.VALANCE		EA	2
15	R12634138	R12634138	A0185	..VALANCE		EA	1
16	R12634249	R12634249	A0185	..BRACKET		EA	2
17	R126342503	1/4 ANSI B27.2-S	Z9009	..WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	8
18	R126342504	1/4 ANSI B27.1 -S	Z9009	..WASHER, HEL SPRING-1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
19	R126342502	1/4-20 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	4
20	R126342501	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	..SCREW, HEX -1/4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	4
21	R12634268	R12634268	A0185	..SHEET		EA	1
22	R1263402110	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	4
23	R126340218	NO 8-32 UNC ANSI B18.2.2bS	Z9009	..NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	8
24	R126340219	NO 8-32 UNCx5/8 ANSI B18.6.3c3S	Z9009	..SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	2
25	R126342505	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	..SCREW, MACHINE, FLAT - ATT.PT CTSK HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	6
26	R12634187	R12634187	A0185	.HANGER		EA	2
27	R12634007	R12634007	A0185	.VALANCE		EA	2
28	R12634136	R12634136	A0185	..VALANCE		EA	1
29	R12634247	R12634247	A0185	..BRACKET		EA	2
30	R12634264	R12634264	A0185	.HANGER		EA	2
31	R12634133	R12634133	A0185	.VALANCE		EA	2
32	R12634183	R12634183	A0185	.HANGER		EA	4
33	R12634184	R12634184	A0185	.HANGER		EA	2
34	R12634010	R12634010	A0185	.VALANCE		EA	2
35	R12634140	R12634140	A0185	..VALANCE		EA	1
36	R12634265	R12634265	A0185	.HANGER		EA	2
37	R12634020	R12634020	A0185	.VALANCE		EA	2
38	R12634142	R12634142	A0185	..VALANCE		EA	1

Air Ducts Assy, Installation (Fig. 2-73)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-073- 39	R12634186	R12634186	A0185	.HANGER		EA	2
40	R12634013	R12634013	A0185	.VALANCE		EA	2
41	R12634143	R12634143	A0185	..VALANCE		EA	1
42	R12634267	R12634267	A0185	..SHEET		EA	1
43	R12634141	R12634141	A0185	.VALANCE		EA	2
44	R12634110	R12634110	A0185	.PROTECTION, WIRE		EA	2
45	R12634005	R12634005	A0185	.AIR DUCT, RIGHT - SEE FIG. 2-75 FOR DETAIL		EA	2
46	R126340011	7/16-14 UNCx1 ANSI B18.2.1aS	Z9009	.BOLT, HEX-7/16-14 UNCx1 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	144
47	R126340012	7/16ANSIB27.1 -S	Z9009	.WASHER, HEL SPRING - 7/16 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	144
48	R126340013	7/16 ANSI B27.2-S	Z9009	.WASHER, PLAIN - 7/16 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	144
49	R126340014	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	72
50	R126340018	1/4-20 UNCx3/4 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC -1/4-20 UNCx3/4 ANSI B18.6.3- SSTL AISI 304A		EA	88
51	R1263400110	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	88
52	R126340019	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	48
53	R1263400111	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	48
54	R12634108	R12634108	A0185	.SHIM			AR
55	R12634105	R12634105	A0185	.SHIM			AR
56	R12634040	R12634040	A0185	.HANGER		EA	2
57	R1263400112	R1263400112	A0185	.RIVET, WATER TIGHT, POP - AD 58 SB		EA	4
58	R1263400119	8/PK	Z9009	.GROMMET, RUBBER -1/4 x 3/8		EA	2
59				DELETED			
60	R1263400114	NO4-40UNCx5/16ANSI B18.6.3c1S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT CROSS REC - NO 4-40 UNCx5/16 ANSI B 18.6.3-SSTL AISI 30		EA	8
61	R1263400115	NO 4 N ANSI B27.2 - S	Z9009	.WASHER, PLAIN NARROW - - ATT.PT NO 4 N ANSI B27.2 - SSTL AISI 302		EA	4
62	R1263400118	242	E0112	.ADHESIVE, THREAD LOCKING - (LCTC, CAT. NO. 242)			AR
63	R12634025	R12634025	A0185	SHEET INSTALLATION		EA	1
64	R12634026	R12634026	A0185	.SHEET		EA	2
65	R126340251	4941	78572	.ADHESIVE TAPE, STRUCTURAL		FT	4.59
66	R126340252	TAP.D 514 BS	Z9009	.RIVET, POP - TAP.D 514 BS		EA	4

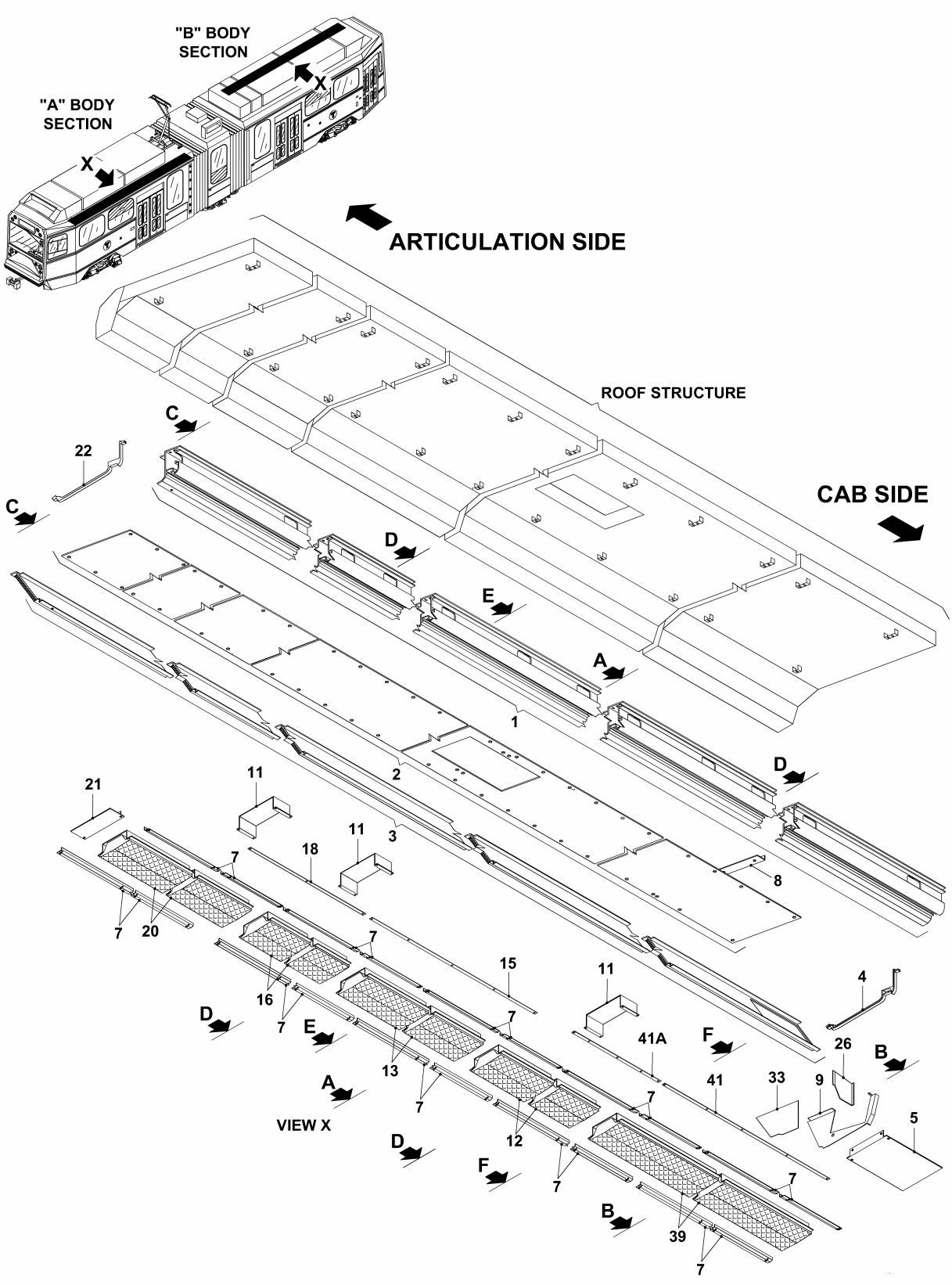


Figure 2-74 Air Duct, Left (Sheet 1 of 5)

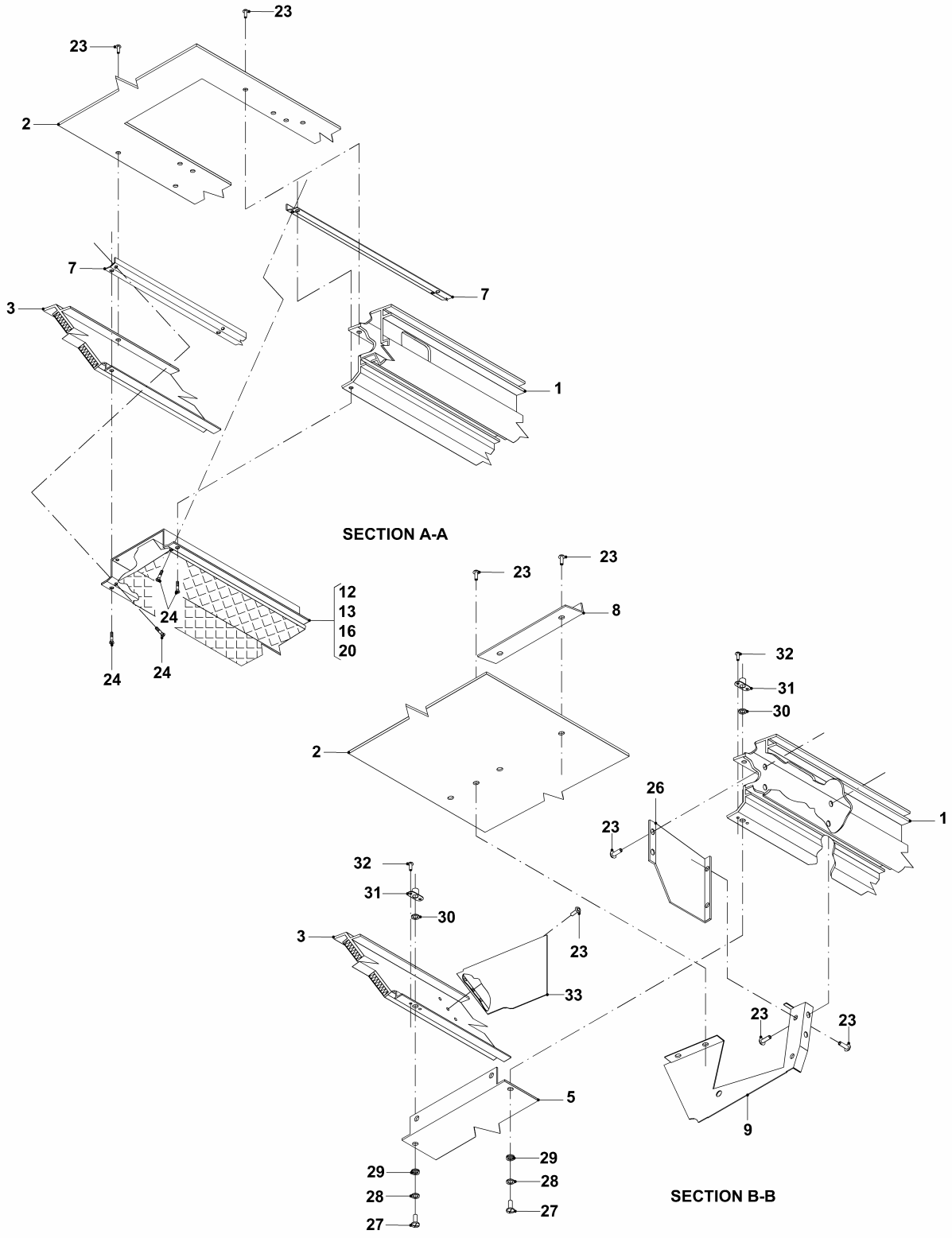


Figure 2-74 Air Duct, Left (Sheet 2 of 5)

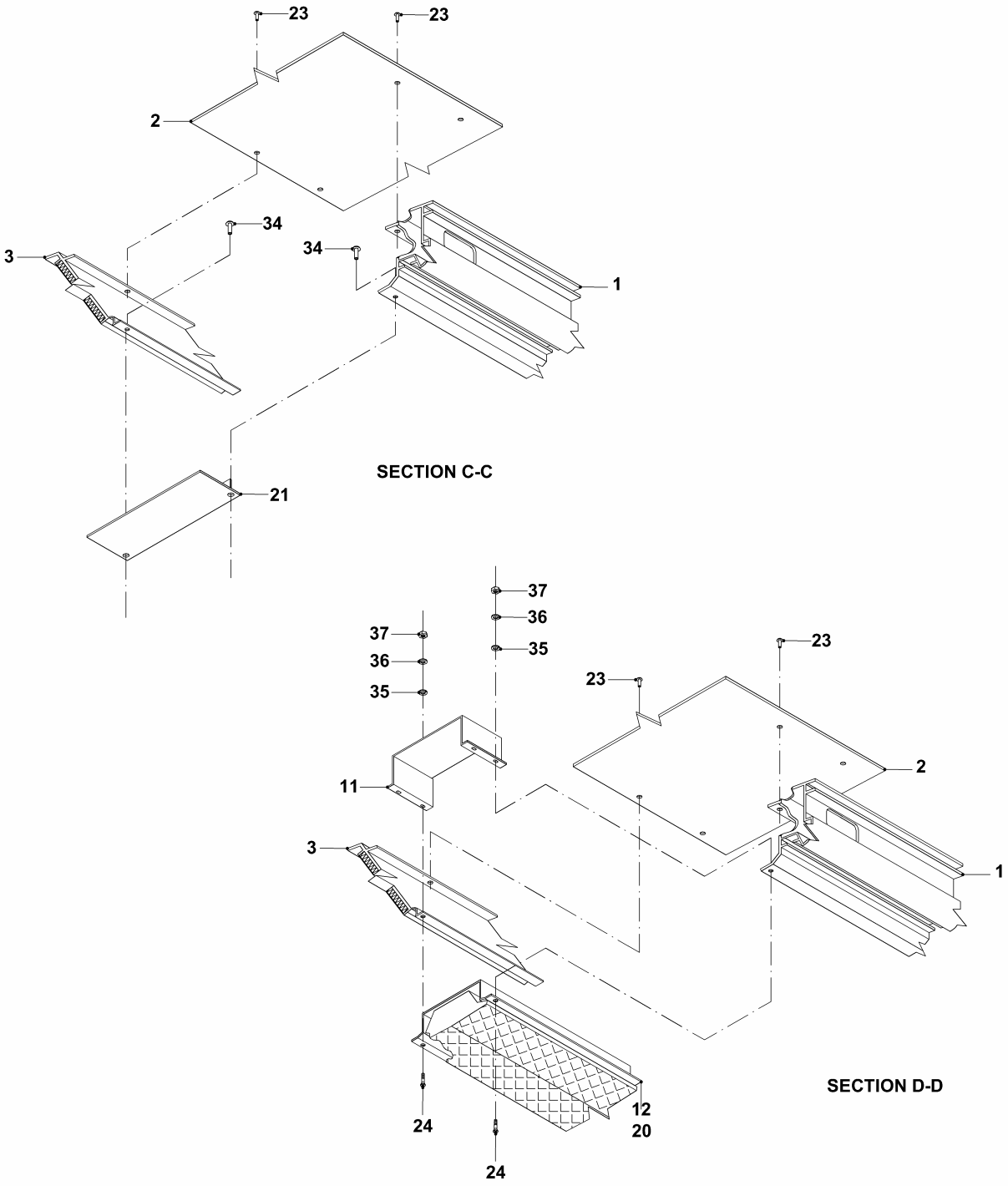


Figure 2-74 Air Duct, Left (Sheet 3 of 5)

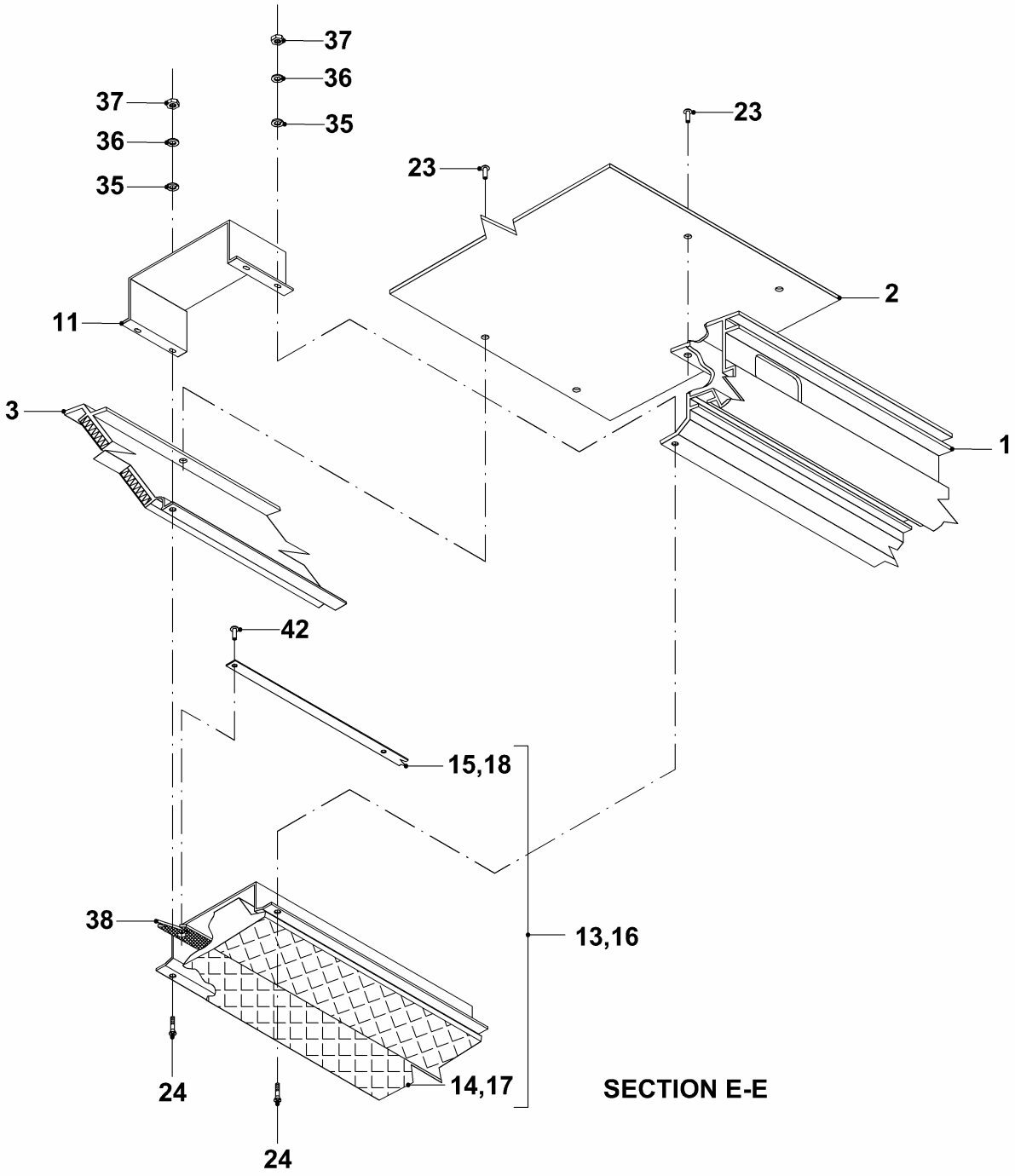


Figure 2-74 Air Duct, Left (Sheet 4 of 5)

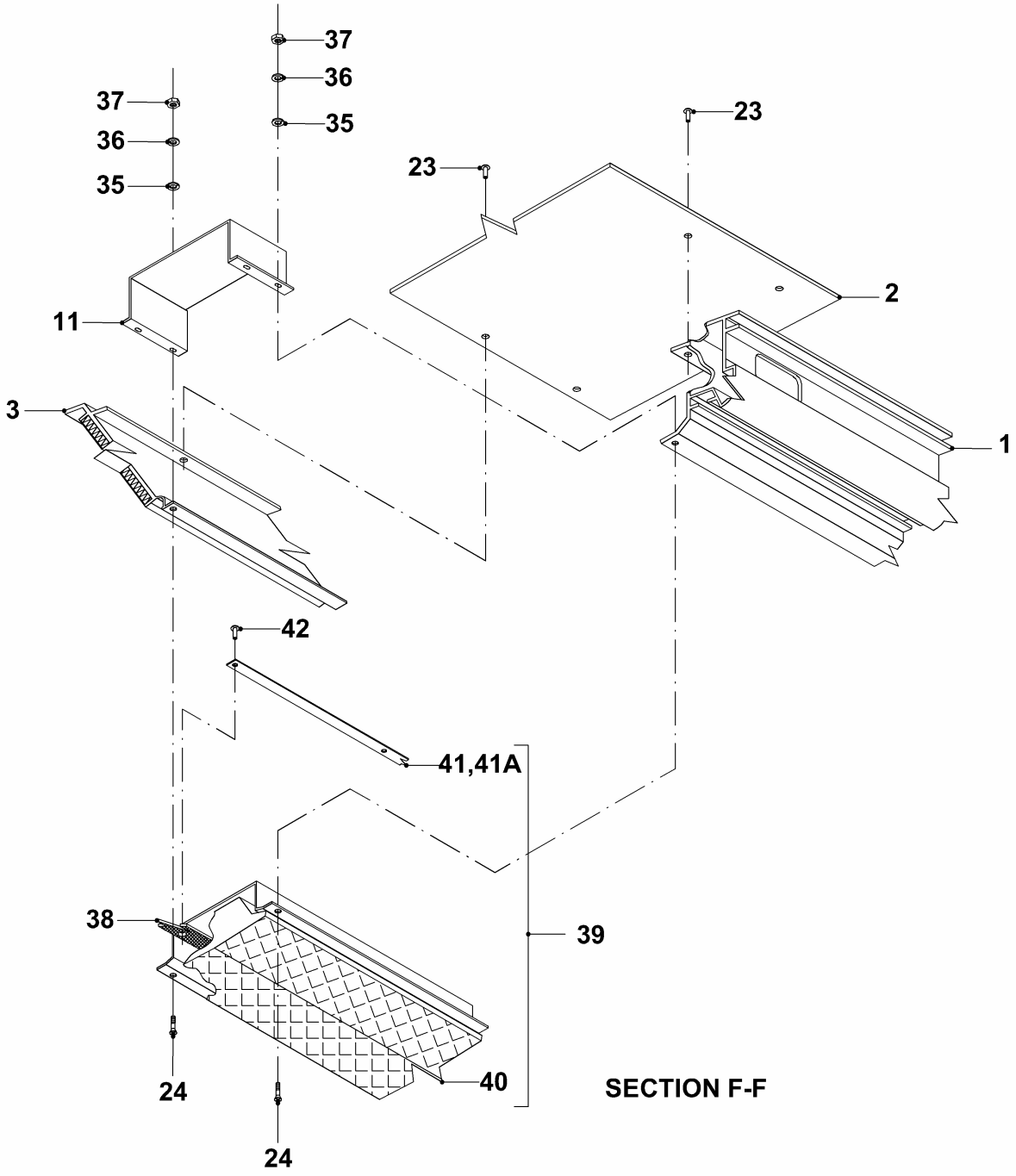


Figure 2-74 Air Duct, Left (Sheet 5 of 5)

Air Duct, Left (Fig. 2-74)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-074-	R12634004	R12634004	A0185	AIR DUCT, LEFT - SEE FIG. 2-73 FOR NHA		EA	1
1	R12634014	R12634014	A0185	.MAIN BOLSTER, LH		EA	1
2	R12634117	R12634117	A0185	.SHEET, UPPER		EA	1
3	R12634016	R12634016	A0185	.SECONDARY BOLSTER, LH		EA	1
4	R12634115	R12634115	A0185	.PLUG, RIGHT		EA	1
5	R12634123	R12634123	A0185	.SHEET, CLOSING		EA	1
6				DELETED			
7	R12634120	R12634120	A0185	.HANGER		EA	10
8	R12634113	R12634113	A0185	.ANGULAR		EA	1
9	R12634125	R12634125	A0185	.SHEET, INSULATION		EA	1
10				DELETED			
11	R12634194	R12634194	A0185	.HANGER		EA	3
12	R12495806	109390006	B0006	.AIRFLOW LIGHT FIXTURE, W/O BALLAST- SEE FIG. 6-1 FOR NHA - 6-21 FOR DETAIL		EA	1
13	R12634032	R12634032	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
14	R12495807	109390007	B0006	..AIRFLOW LIGHT FIXTURE, 2-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-22 FOR DETAIL		EA	1
15	R12634036	R12634036	A0185	..SHEET, STEEL		EA	1
16	R12634031	R12634031	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
17	R12495804	109390004	B0006	..AIRFLOW AND EMERGENCY LIGHT FIXTURE, 2-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-19 FOR DETAIL		EA	1
18	R12634035	R12634035	A0185	..SHEET, STEEL		EA	1
19				DELETED			
20	R12495803	109390003	B0006	.AIRFLOW LIGHT FIXTURE, 1-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-18 FOR DETAIL		EA	1
21	R12634122	R12634122	A0185	.SHEET, CLOSING		EA	1
22	R12634116	R12634116	A0185	.PLUG, LEFT		EA	1
23	R126341976	AD 58 SB	Z9009	.RIVET, R.P.H. POP - AD 58 SB - - ATT.PT AlMg5		EA	91
24	R1263419714	NO 10-24 UNCx1 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	92
25				DELETED			
26	R12634119	R12634119	A0185	.STRESS RAISER		EA	1
27	R126340041	85-78-300-20	B0005	.PIVOT		EA	2
28	R126340042	85-34-301-12	B0005	.RETAINER		EA	2
29	R126340043	14-18-150-24	B0005	.SPRING		EA	2
30	R126340044	85-46-103-39	B0005	.WASHER		EA	2
31	R126340045	85-35-295-20	B0005	.RECEPTACLE		EA	2
32	R1263400412	TAP.K410BS	Z9009	.RIVET, F.C.H. POP -TAP.K410 - ATT.PT BS - Al Mg 3.5		EA	4
33	R12634173	R12634173	A0185	.STRESS RAISER		EA	1
34	R1263400410	AK610SB	Z9009	.RIVET, M.H. POP-AK 610 SB- - ATT.PT AlMg5		EA	2
35	R1263400415	NO 10 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING-NO 10 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	12
36	R1263400416	NO10ANSIB27.2-S	Z9009	.WASHER, PLAIN - NO 10 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	12

Air Duct, Left (Fig. 2-74)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-074- 37	R1263400417	NO 10-24 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 10-24 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	12
38	R1263400418	4950	78572	.ADHESIVE TAPE, BOTH SIDES - 77.16 x 0.75		EA	1
39	R12634041	R12634041	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
40	R12495808	109390001	B0006	..AIRFLOW AND EMERGENCY LIGHT FIXTURE, W/O BALLAST - SEE FIG. 6-1 FOR NHA - 6-16 FOR DETAIL		EA	1
41	R12634044	R12634044	A0185	..SHEET, PERFORATED STEEL		EA	1
41A	R12634046	R12634046	A0185	..SHEET, STEEL		EA	1
42	R1263400419	TAP.D 46 BS	Z9009	.RIVET, POP - TAP.D 46 BS - Al - ATT.PT Mg3.5		EA	15

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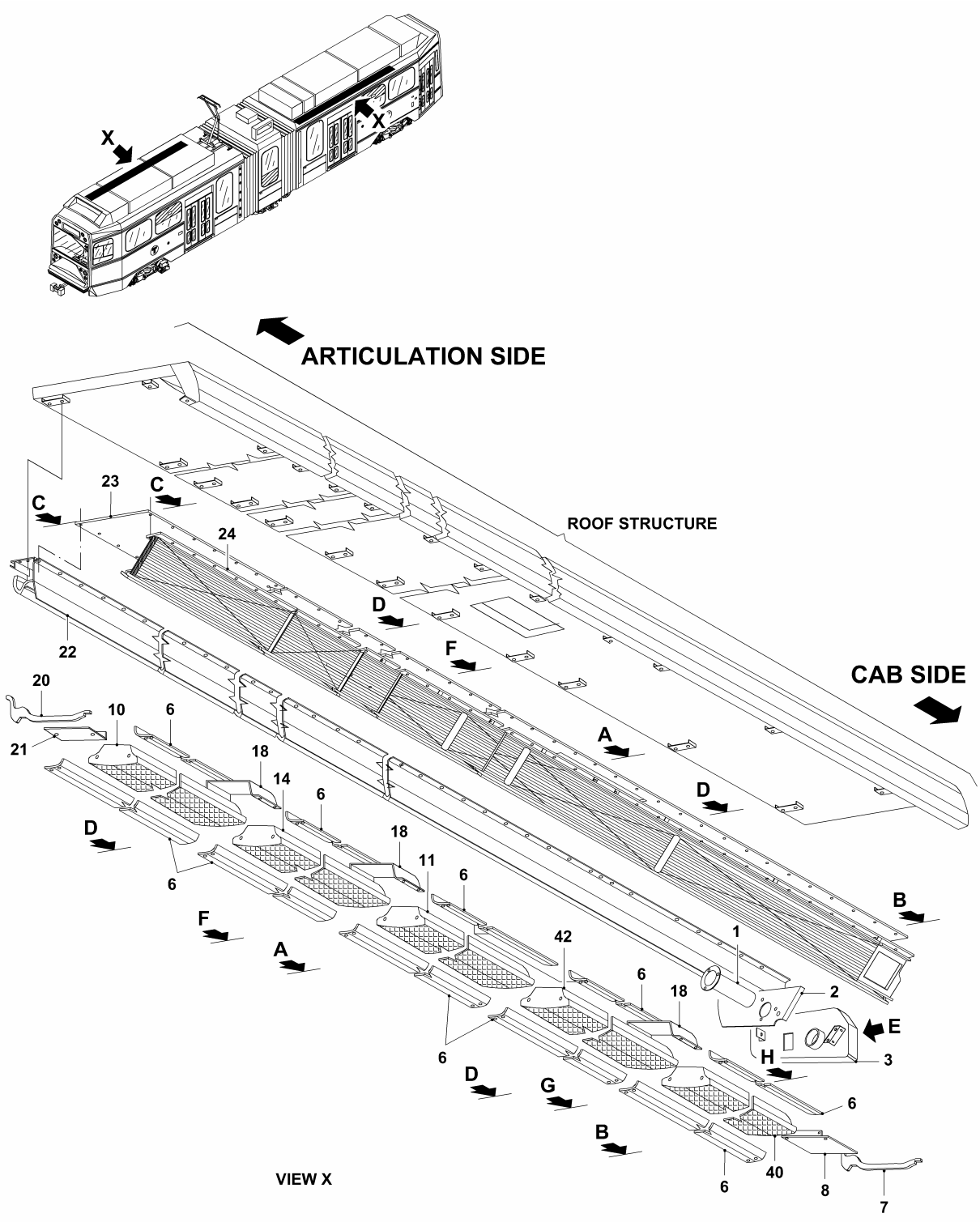

Figure 2-75 Air Duct, Right (Sheet 1 of 4)

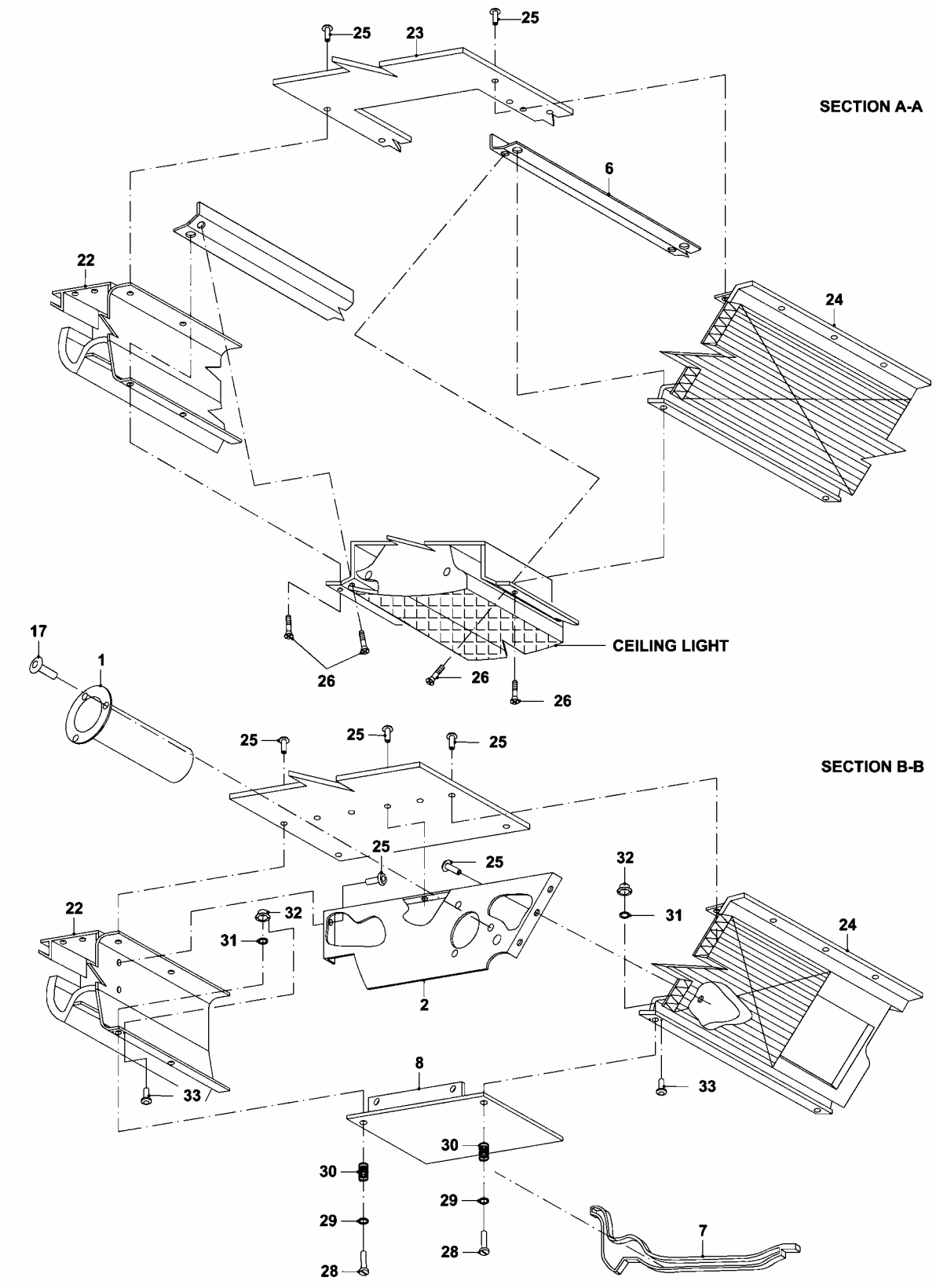

Figure 2-75 Air Duct, Right (Sheet 2 of 4)

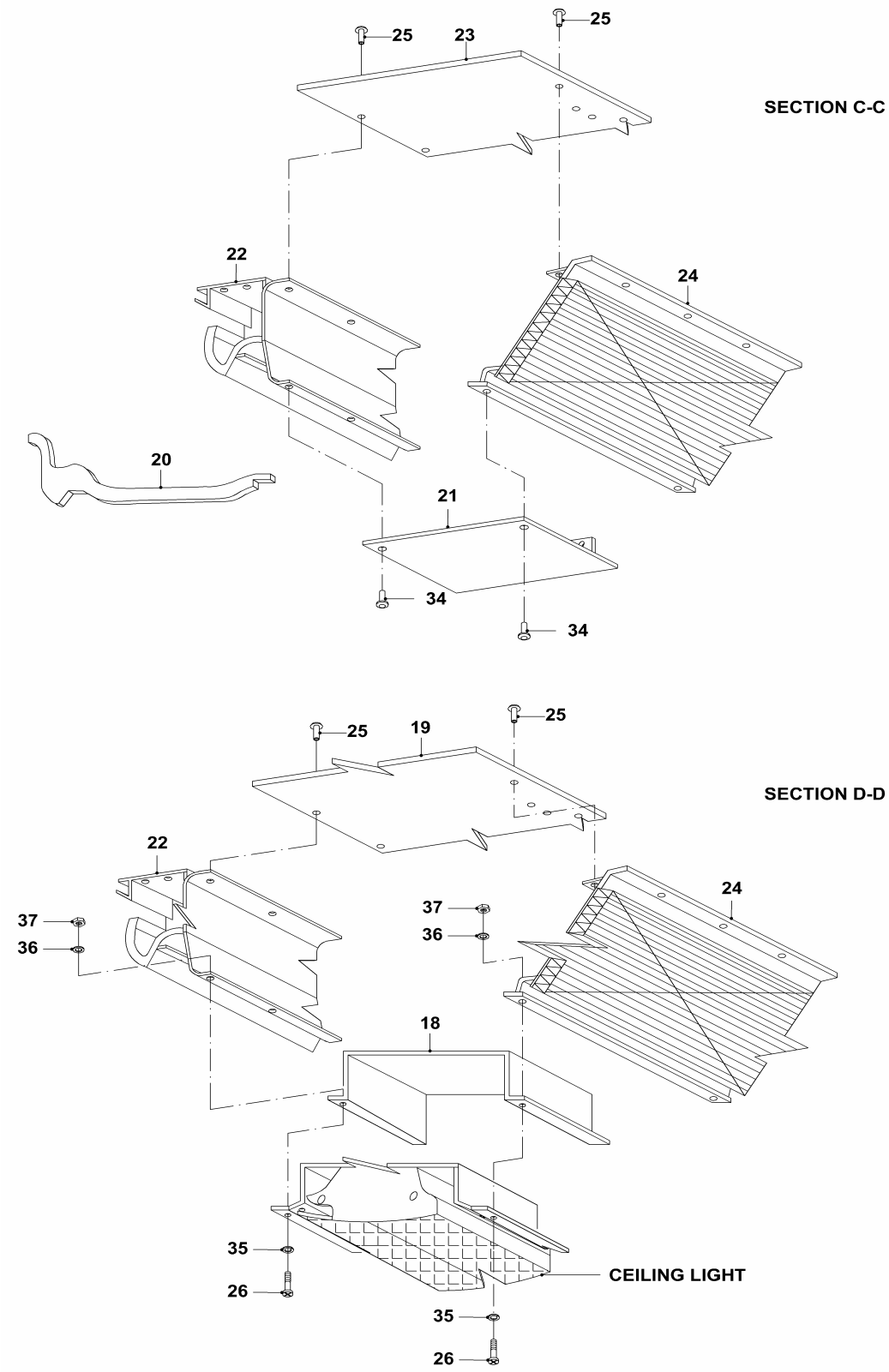

Figure 2-75 Air Duct, Right (Sheet 3 of 4)

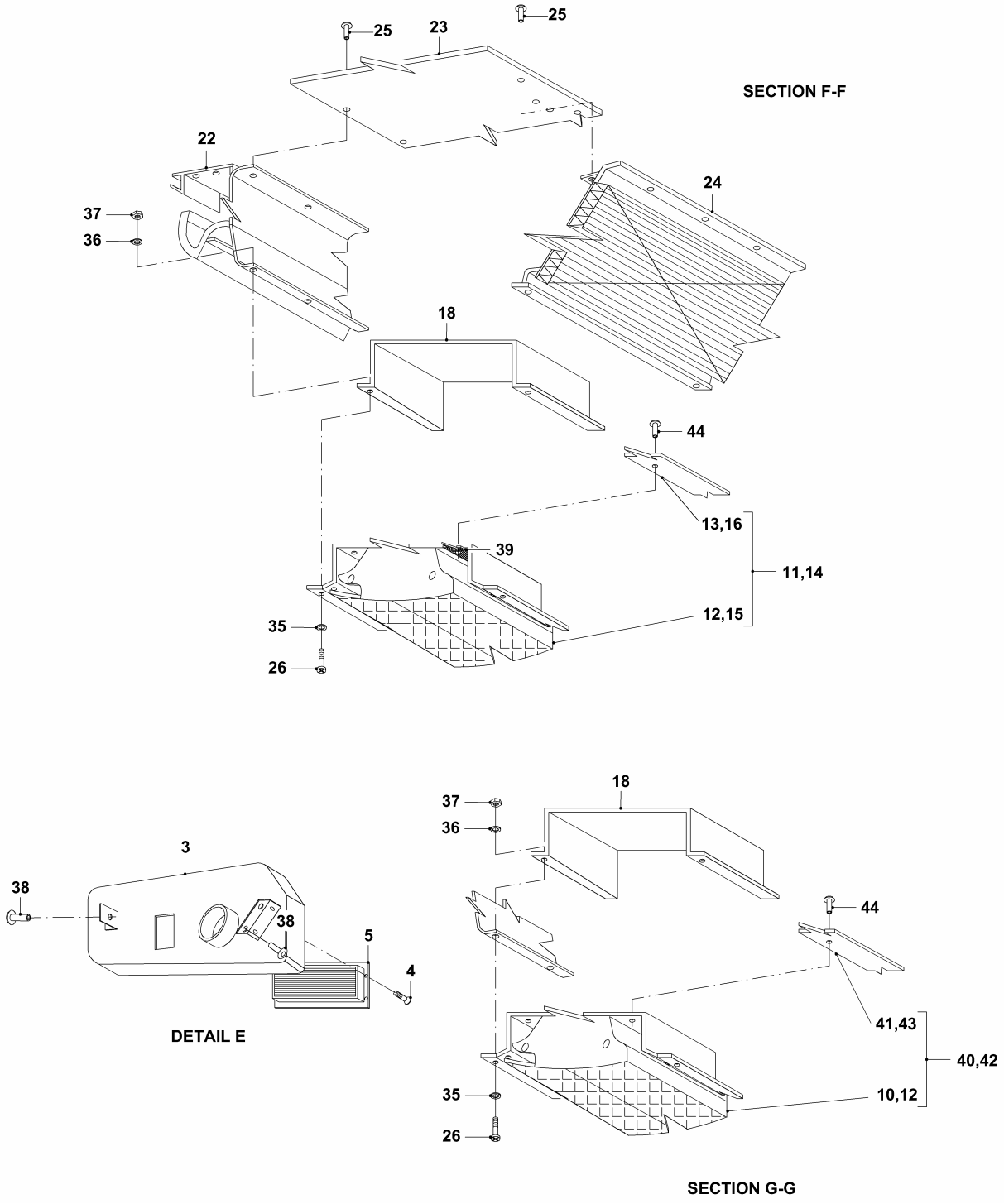

Figure 2-75 Air Duct, Right (Sheet 4 of 4)

Air Duct, Right (Fig. 2-75)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-075-	R12634005	R12634005	A0185	AIR DUCT, RIGHT - SEE FIG. 2-73 FOR		EA	1
1	R12634145	R12634145	A0185	TUBE		EA	1
2	R12634131	R12634131	A0185	.SHEET, CLOSING		EA	1
3	R12634161	R12634161	A0185	TERMINAL, CAB SIDE		EA	1
4	R126341612	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	..SCREW, MACHINE, FLAT - ATT.PT CTSK HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	4
5	R12634162	R12634162	A0185	..GRID		EA	1
6	R12634120	R12634120	A0185	.HANGER		EA	10
7	R12634116	R12634116	A0185	.PLUG, LEFT		EA	1
8	R12634132	R12634132	A0185	.SHEET, CLOSING		EA	1
9				DELETED			
10	R12495808	109390001	B0006	.AIRFLOW AND EMERGENCY LIGHT FIXTURE, W/O BALLAST - SEE FIG. 6-1 FOR NHA - 6-16 FOR DETAIL		EA	2
11	R12634033	R12634033	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
12	R12495805	109390005	B0006	..AIRFLOW AND EMERGENCY LIGHT FIXTURE, 2-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-20 FOR DETAIL		EA	2
13	R12634036	R12634036	A0185	..SHEET, STEEL		EA	1
14	R12634034	R12634034	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
15	R12495802	109390002	B0006	..AIRFLOW AND EMERGENCY LIGHT FIXTURE, 1-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-17 FOR DETAIL		EA	1
16	R12634035	R12634035	A0185	..SHEET, STEEL		EA	1
17	R126340058	AD 46 SB	Z9009	.RIVET, R.P.H. POP - AD 46 SB - ATT.PT		EA	3
18	R12634194	R12634194	A0185	.HANGER		EA	3
19				DELETED			
20	R12634115	R12634115	A0185	.PLUG, RIGHT		EA	1
21	R12634122	R12634122	A0185	.SHEET, CLOSING		EA	1
22	R12634015	R12634015	A0185	.MAIN BOLSTER, RH		EA	1
23	R12634118	R12634118	A0185	.SHEET, UPPER		EA	1
24	R12634017	R12634017	A0185	.SECONDARY BOLSTER, RH		EA	1
25	R126340056	AD 58 SB	Z9009	.RIVET, R.P.H. POP - AD 58 SB - ATT.PT AlMg5		EA	85
26	R1263400514	NO 10-24 UNCx1 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	92
27	R12634147	R12634147	A0185	.ANGULAR		EA	1
28	R126340051	85-78-300-20	B0005	.PIVOT - ATT.PT		EA	2
29	R126340052	85-34-301-12	B0005	.RETAINER - ATT.PT		EA	2
30	R126340053	14-18-150-24	B0005	.SPRING - ATT.PT		EA	2
31	R126340054	85-46-103-39	B0005	.WASHER - ATT.PT		EA	2
32	R126340055	85-35-295-20	B0005	.RECEPTACLE - ATT.PT		EA	2
33	R1263400512	TAP.K410BS-	Z9009	.RIVET, F.C.H. POP -TAP.K410 BS - Al Mg 3.5 -ATT.PT		EA	4
34	R1263400510	AK610SB	Z9009	.RIVET, M.H. POP-AK 610 SB- AlMg5 -ATT.PT		EA	2
35	R1263400515	NO 10 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING-NO 10 ANSI B27.1 - SSTL AISI 302 -ATT.PT		EA	12
36	R1263400516	NO10ANSIB27.2-S	Z9009	.WASHER, PLAIN - NO 10 ANSI B27.2 - SSTL AISI 304 - ATT.PT		EA	12

Air Duct, Right (Fig. 2-75)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-075- 37	R1263400517	NO 10-24 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 10-24 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	12
38	R1263400519	TAP.D 512 BS	Z9009	.RIVET, POP-TAP.D 512 BS-Al - ATT.PT Mg5		EA	10
39	R1263400520	4950	78572	.ADHESIVE TAPE, BOTH SIDES - 77.16 x 0.75		EA	1
40	R12634043	R12634043	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
41	R12634044	R12634044	A0185	..SHEET, PERFORATED STEEL		EA	1
42	R12634045	R12634045	A0185	.CEILING LIGHT FIXTURE ASSY		EA	1
43	R12634046	R12634046	A0185	..SHEET, STEEL		EA	1
44	R1263400521	TAP.D 46 BS	Z9009	.RIVET, POP - TAP.D 46 BS-Al - ATT.PT Mg3.5		EA	15

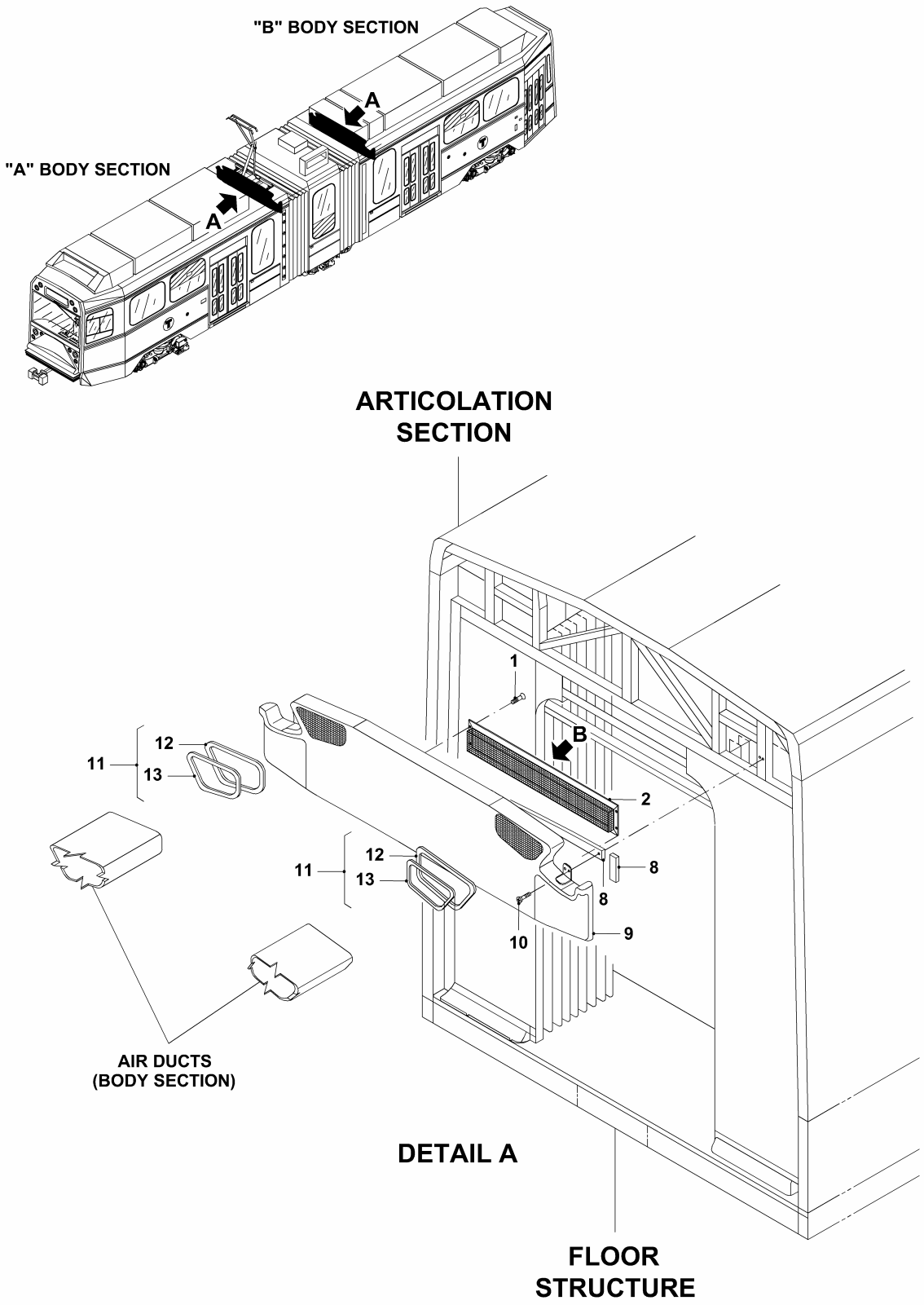

Figure 2-76 Air Duct, Articulation Side (Sheet 1 of 2)

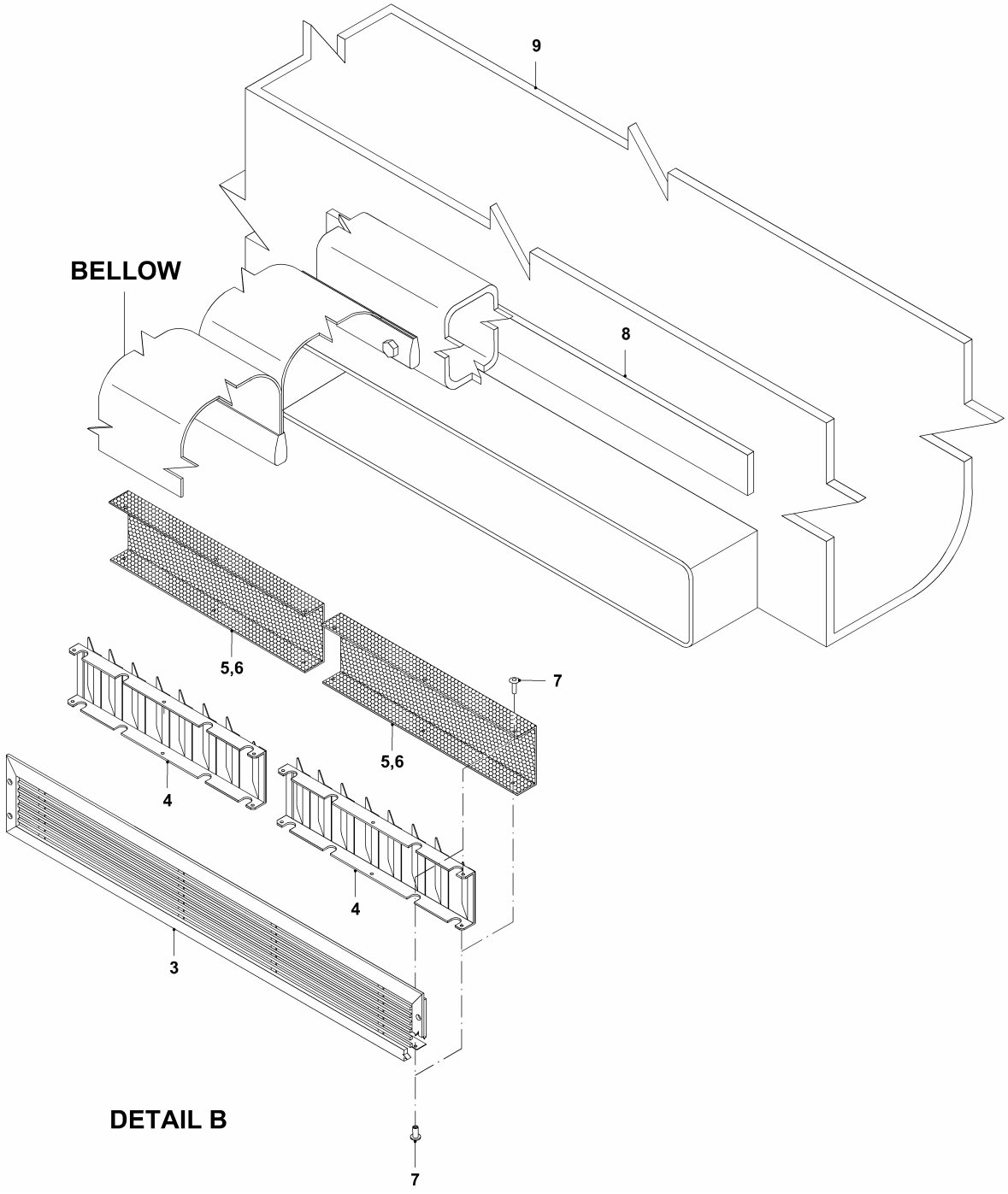

Figure 2-76 Air Duct, Articulation Side (Sheet 2 of 2)

Air Duct, Articulation Side (Fig. 2-76)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-076-	R12634003	R12634003	A0185	AIR DUCT, ARTICULATION SIDE - SEE FIG. 5-1 FOR NHA		EA	1
1	R126341901	NO 8-32 UNCx5/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	8
2	R12920765	R12920765	A0185	.GRID ASSY		EA	2
3	R12920725	R12920725	A0185	..GRID		EA	1
4	R12920766	R12920766	A0185	..BENT SHEET		EA	2
5	R12920767	R12920767	A0185	..SHEET, PERFORATED		EA	1
6	R12920768	R12920768	A0185	..SHEET, PERFORATED		EA	1
7	R129207651	TAP.D 88 BS	Z9009	..RIVET, R.P.H. POP - TAP.D 88 BS - Al Mg		EA	12
8	R12634287	R12634287	A0185	.GASKET		FT	6.3
9	R12634165	R12634165	A0185	TERMINAL, ARTICULATION SIDE		EA	2
10	R126341902	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	8
11	R12634176	R12634176	A0185	.FLANGE ASSY		EA	4
12	R12634217	R12634217	A0185	..GASKET		FT	3.22
13	R12634215	R12634215	A0185	..FLANGE		EA	1

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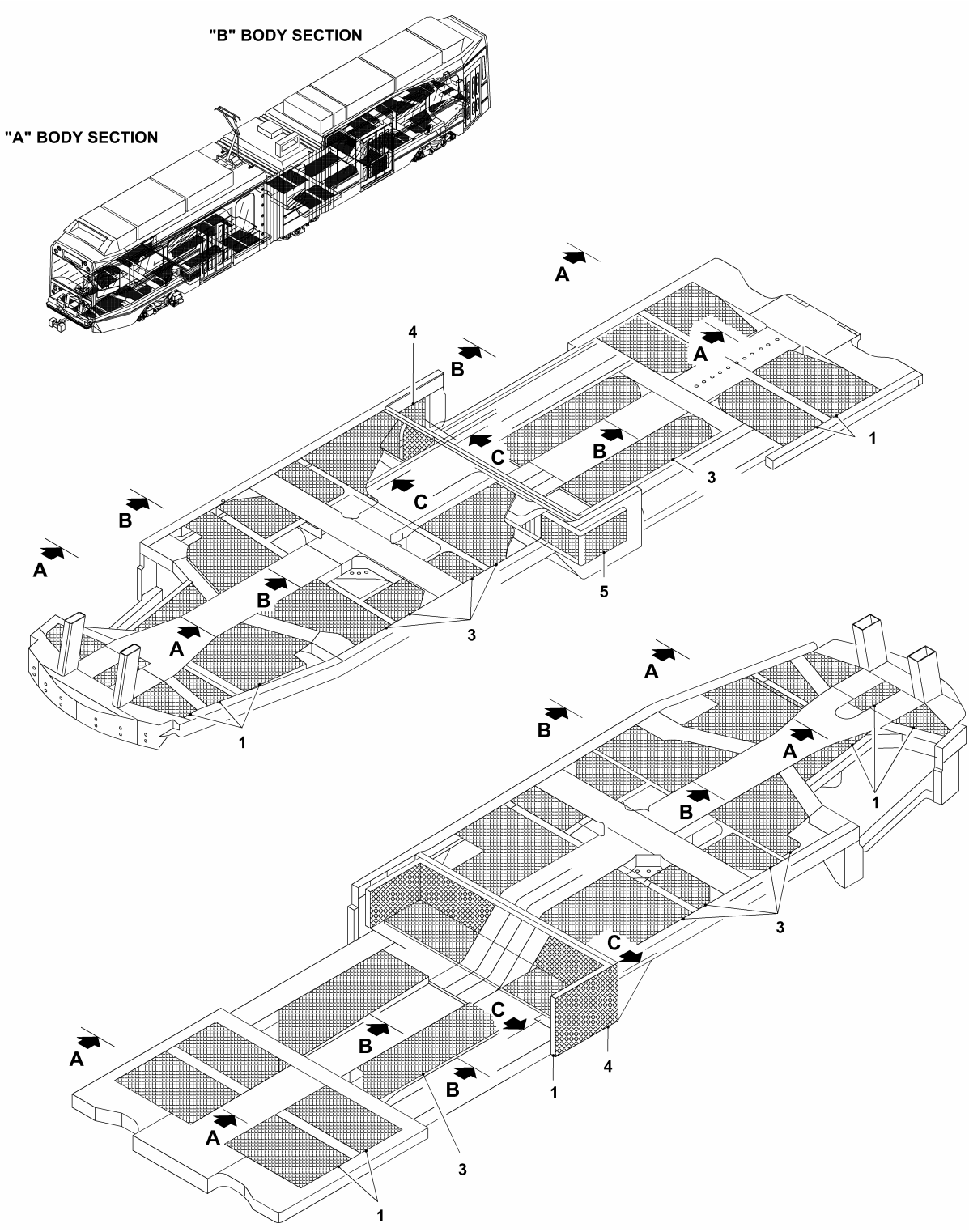

Figure 2-77 Thermal/Acoustical Insulation (Sheet 1 of 5)

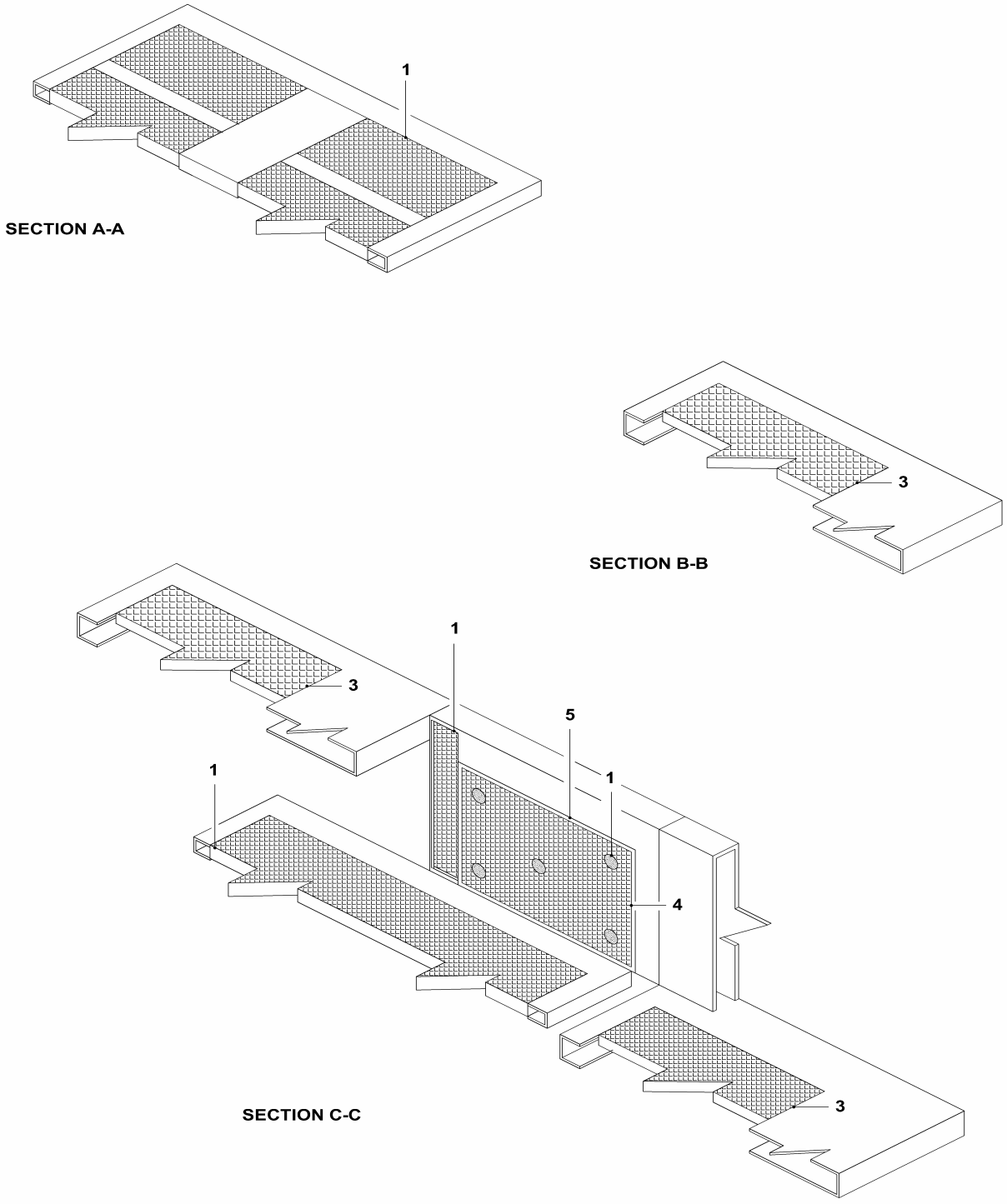

Figure 2-77 Thermal/Acoustical Insulation (Sheet 2 of 5)

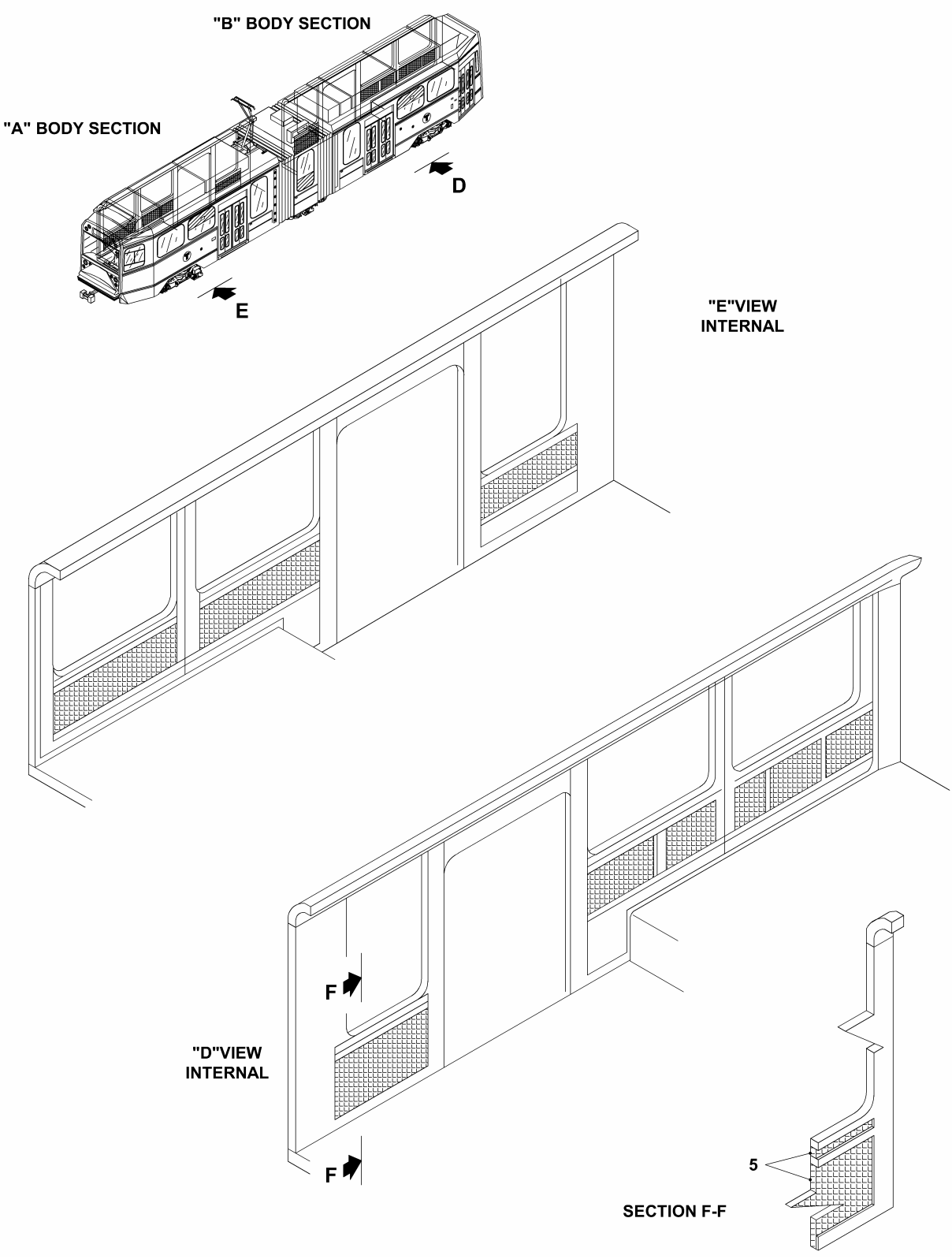

Figure 2-77 Thermal/Acoustical Insulation (Sheet 3 of 5)

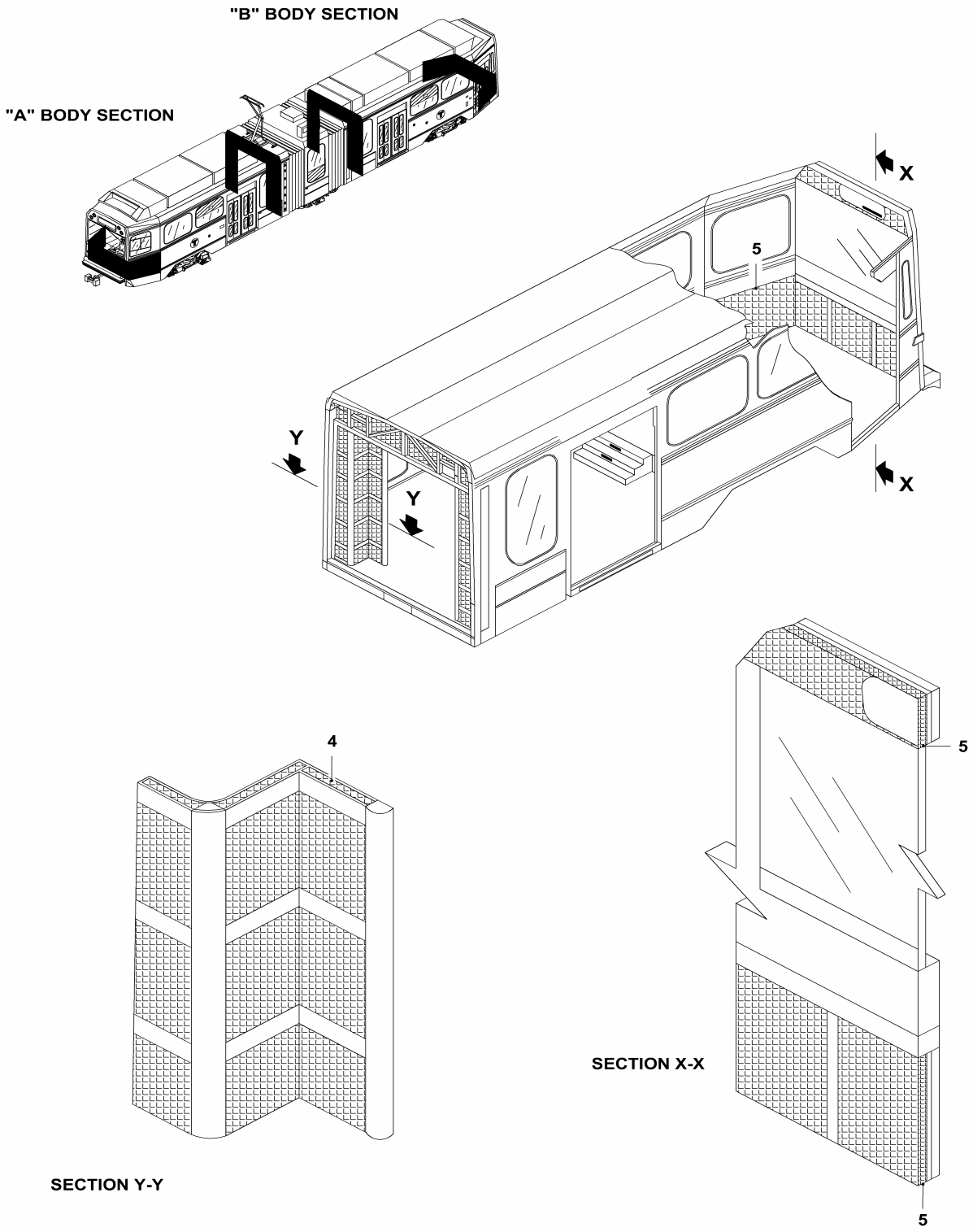

Figure 2-77 Thermal/Acoustical Insulation (Sheet 4 of 5)

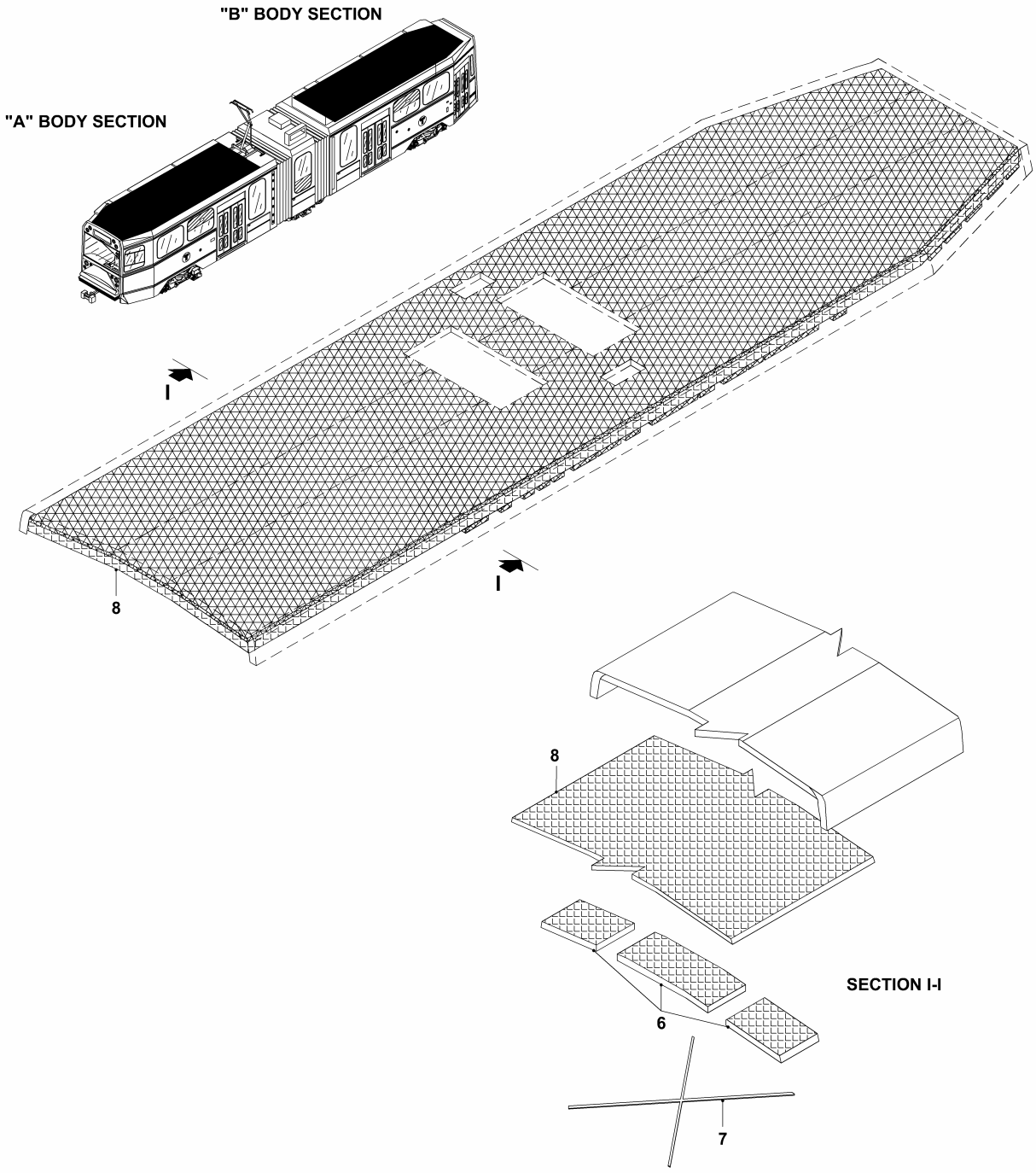

Figure 2-77 Thermal/Acoustical Insulation (Sheet 5 of 5)

Thermal/Acoustical Insulation (Fig. 2-77)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-077-	R12000700	R12000700	A0185	THERMAL/ACOUSTICAL INSULATION		EA	1
1	R12000712	R12000712	A0185	THERMAL INSULATION - THK 3, DENSITY 1 & 1.5 lbs/cu.ft - ULTRALITE			AR
2				DELETED			
3	R12000711	R12000711	A0185	THERMAL INSULATION - THK 1, DENSITY 1 lbs/cu.ft - ULTRALITE			AR
4	R12000716	R12000716	A0185	THERMAL INSULATION - THK 1-1/2, DENSITY 1 lbs/cu.ft - ULTRALITE			AR
5	R12000713	R12000713	A0185	THERMAL INSULATION - THK 2-1/2, DENSITY 0.75 lbs/cu.ft - ULTRALITE			AR
6	R12000714	R12000714	A0185	THERMAL INSULATION - THK 1, DENSITY 0.75 lbs/cu.ft - ULTRALITE			AR
7	R12000718	0.05 DIA	Z9009	.SPRING - 0.05 DIA - STL UNI 3823			AR
8	R12000715	R12000715	A0185	THERMAL INSULATION - THK 2-1/4, DENSITY 0.75 lbs/cu.ft - ULTRALIT			AR

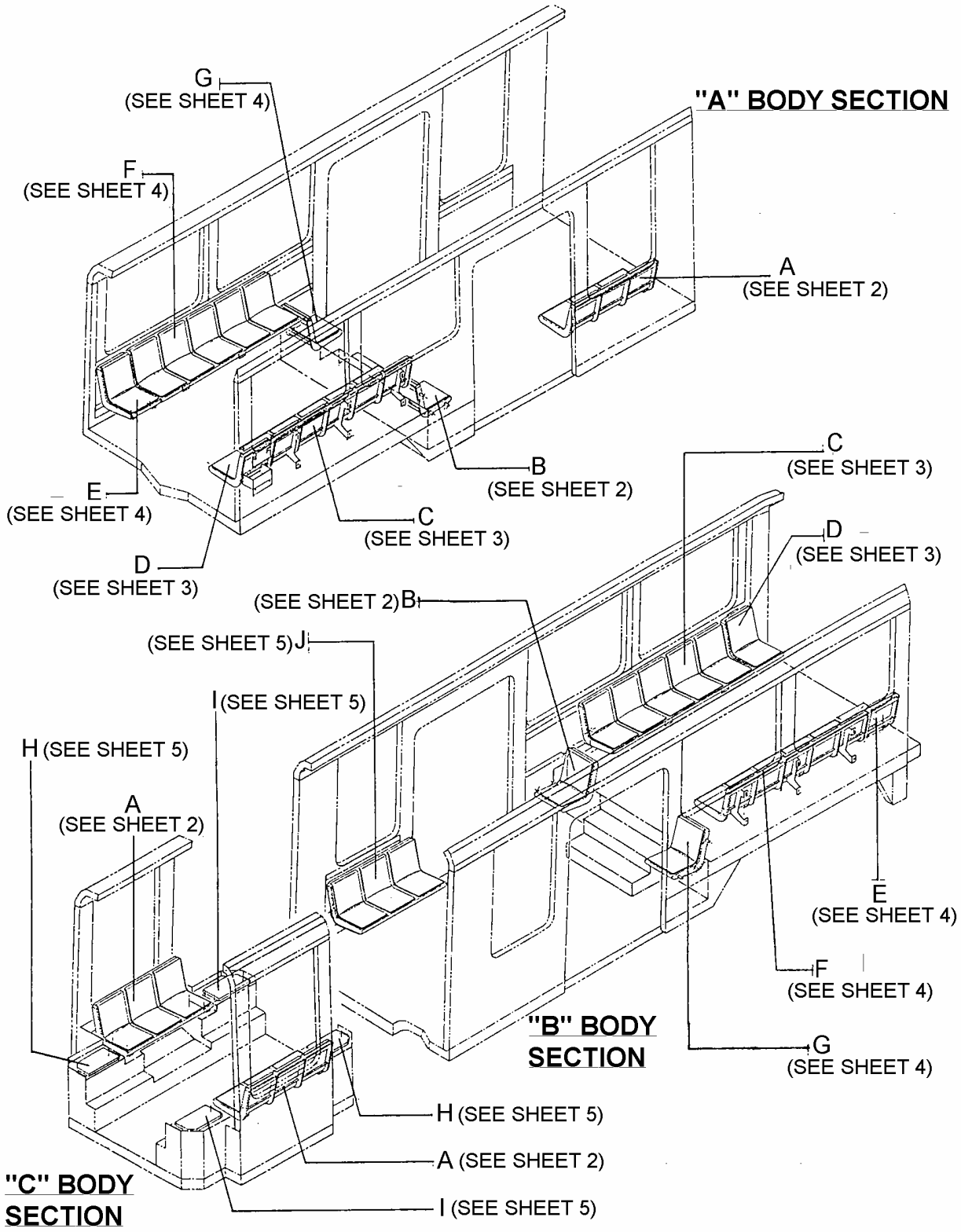

Figure 2-78 Seats Installation (Sheet 1 of 5)

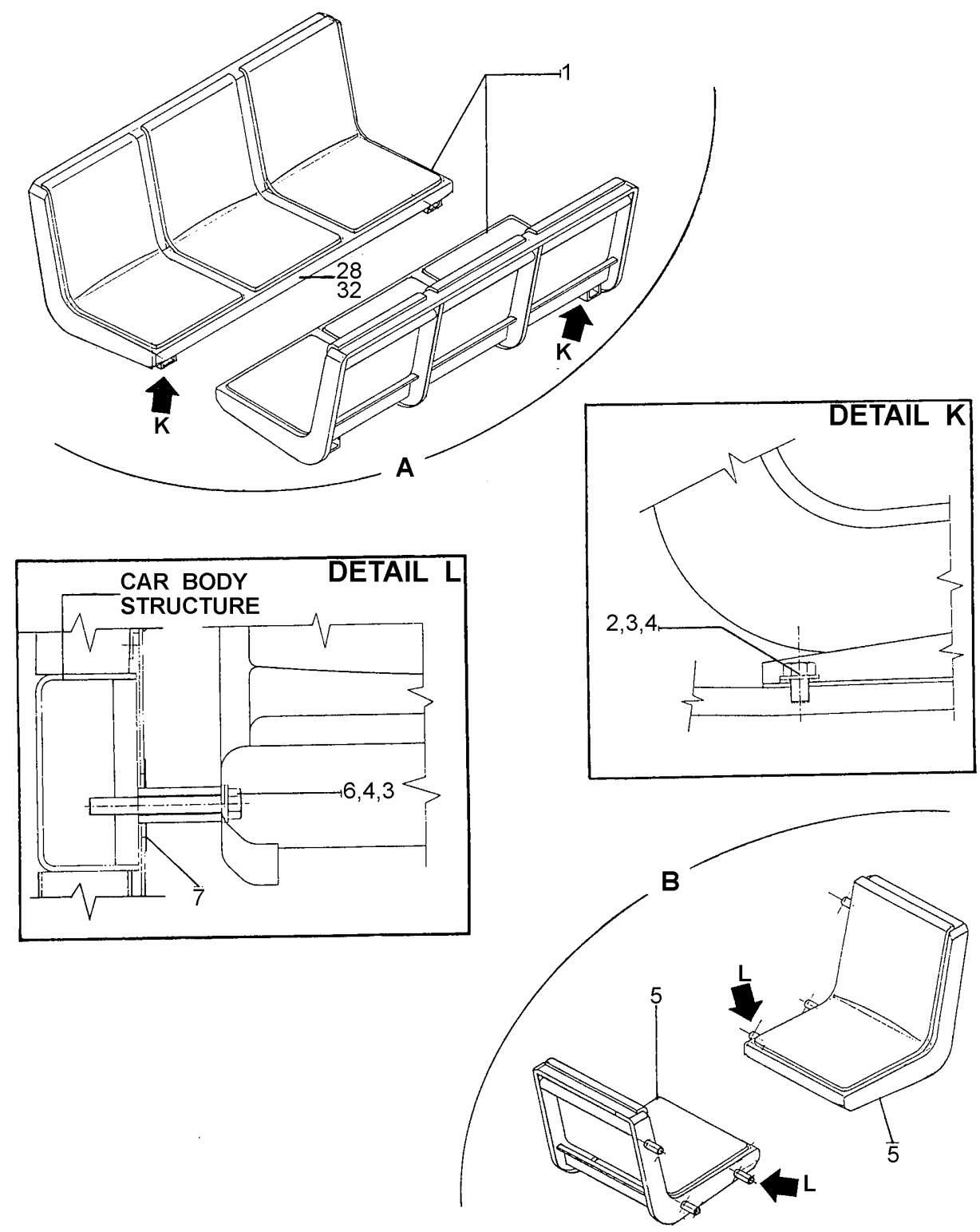

Figure 2-78 Seats Installation (Sheet 2 of 5)

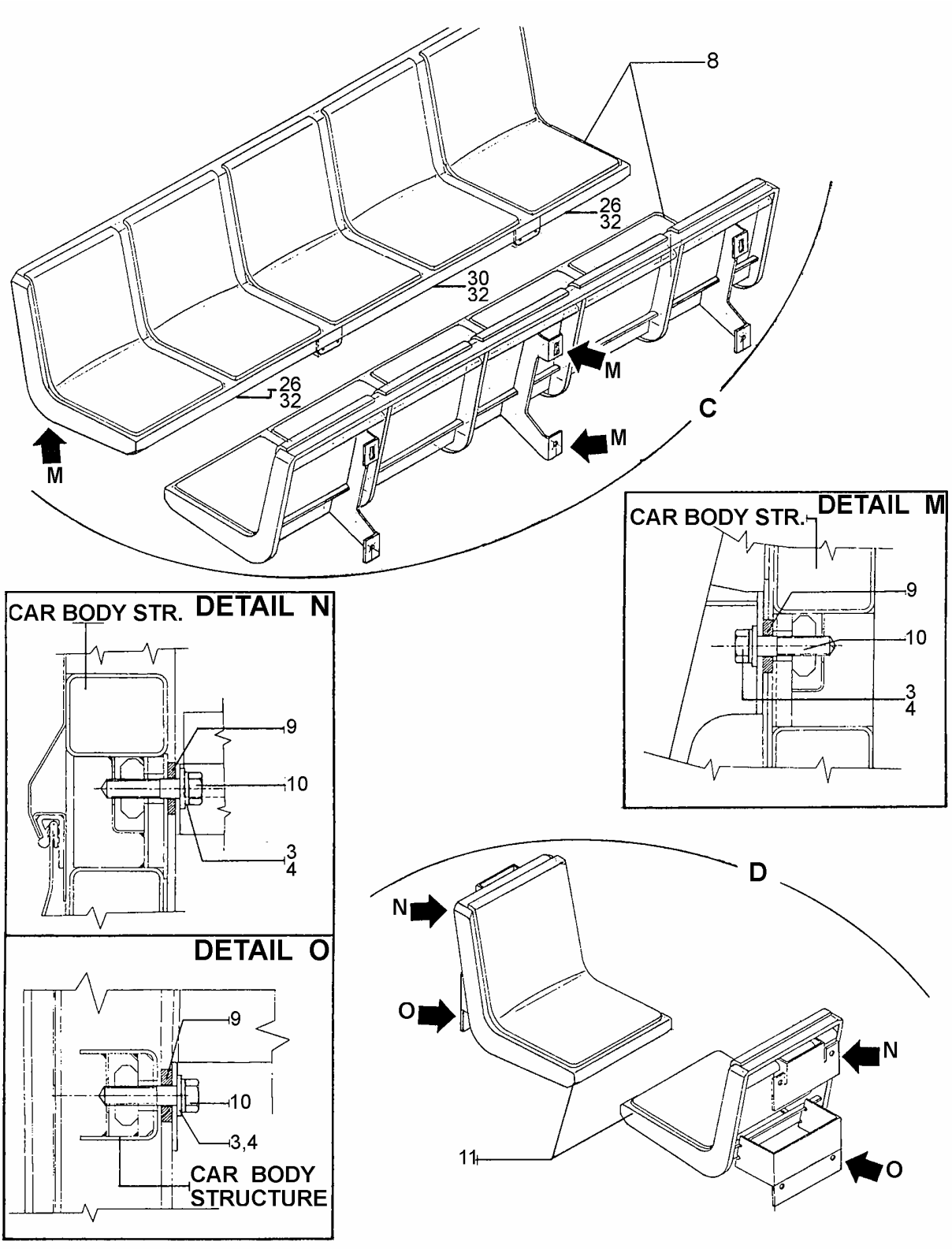

Figure 2-78 Seats Installation (Sheet 3 of 5)

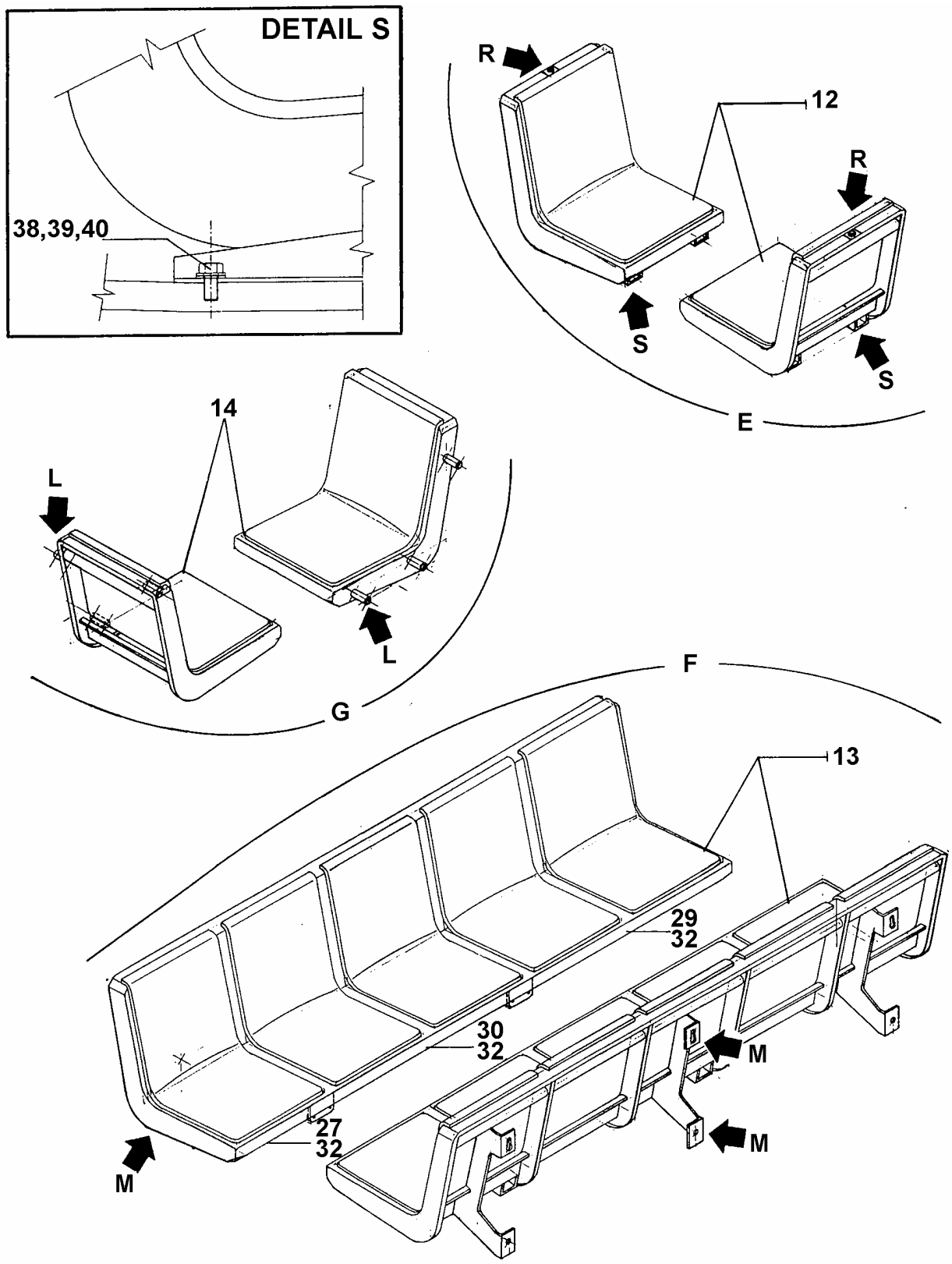

Figure 2-78 Seats Installation (Sheet 4 of 5)

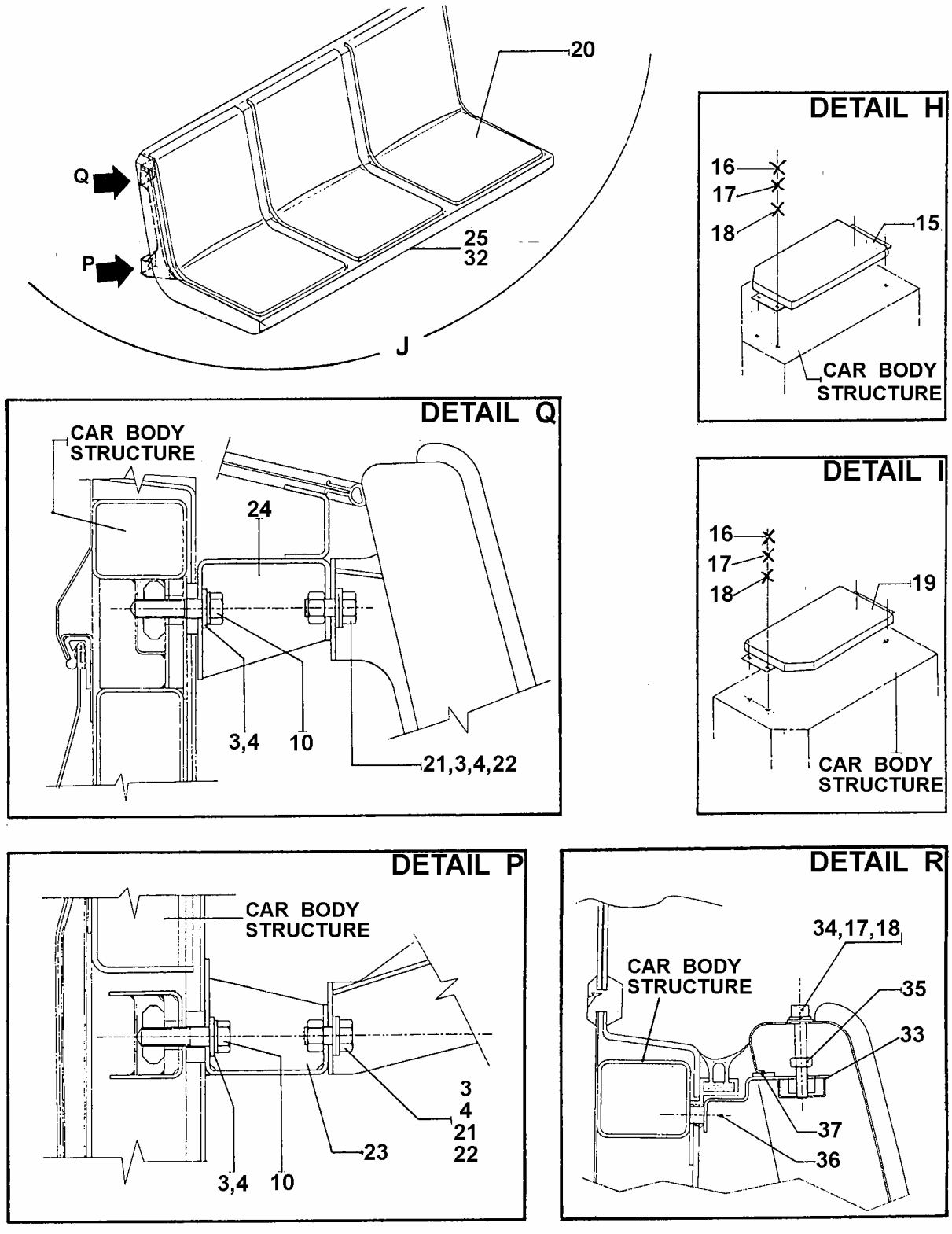

Figure 2-78 Seats Installation (Sheet 5 of 5)

Seats Installation (Fig. 2-78)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-078-	R12920000	R12920000	A0185	SEATS INSTALLATION		EA	1
1	R12954000	3444011	B0024	.SEAT, 3 PASSENGER BOX MOUNT - SEE FIG. 2-83 FOR DETAIL		EA	3
2	R129200001	1/2-13 UNCx3/4 ANSI B18.2.1aS	Z9009	.BOLT, HEX-1/2-13 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	4
3	R129200002	1/2 A ANSI B27.2-S	Z9009	.WASHER, PLAIN TYPE A -1/2 A - ATT.PT ANSI B27.2 - SSTL AISI 304		EA	56
4	R129200003	1/2 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/2 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	56
5	R12951002	3444017	B0024	.SEAT, 1 PASSENGER TRANSVERSAL, LH - SEE FIG. 2-81 FOR DETAIL		EA	2
6	R129200004	1/2-13 UNCx3-3/4 ANSI B18.2.1aS	Z9009	.BOLT, HEX -1/2-13 UNCx3-3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	12
7	R12920012	R12920012	A0185	.PLATE		EA	4
8	R12958001	3444012	B0024	.SEAT, 5 PASSENGER, LH - SEE FIG. 2-86 FOR DETAIL		EA	2
9	R12920014	R12920014	A0185	.SPACER		EA	72
10	R12920013	R12920013	A0185	.SCREW, HEX, SPECIAL-1/2 - ATT.PT		EA	36
11	R12951000	3444015	B0024	.SEAT, 1 PASSENGER CANTILEVER - SEE FIG. 2-80 FOR DETAIL		EA	2
12	R12951001	3444014	B0024	.SEAT, 1 PASSENGER BOX MOUNT - SEE FIG. 2-79 FOR DETAIL		EA	2
13	R12958000	3444013	B0024	.SEAT, 5 PASSENGER, RH - SEE FIG. 2-85 FOR DETAIL		EA	2
14	R12951003	3444016	B0024	.SEAT, 1 PASSENGER TRANSVERSAL, RH - SEE FIG. 2-82 FOR DETAIL		EA	2
15	R12950600	3444019	B0024	.SEAT, BOX PASSENGER PAD, RH - SEE FIG. 2-107 FOR DETAIL		EA	2
16	R129200005	5/16-18 UNCx3/4 ANSI B18.2.1aS	Z9009	.BOLT, HEX - 5/16-18 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	16
17	R129200007	5/16 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING - 5/16 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	18
18	R129200006	5/16AANSIB27.2-S	Z9009	.WASHER, PLAIN TYPE A - 5/16 - ATT.PT A ANSI B27.2 - SSTL AISI 304		EA	18
19	R12950601	3444018	B0024	.SEAT, BOX PASSENGER PAD, LH - SEE FIG. 2-108 FOR DETAIL		EA	2
20	R12954001	3444010	B0024	.SEAT, 3 PASSENGER CANTILEVER - SEE FIG. 2-84 FOR DETAIL		EA	1
21	R129200008	1/2-13 UNCx1 ANSI B18.2.1aS	Z9009	.BOLT, HEX -1/2-13 UNCx1 ANSI - ATT.PT B18.2.1 -SSTL AISI 304		EA	4
22	R129200009	1/2-13 UNC ANSI B18.2.2aS1	Z9009	.NUT, HEX -1/2-13 UNC ANSI - ATT.PT B18.2.2 - SSTL AISI 304CW		EA	4
23	R12954101	R12954101	A0185	.SUPPORT		EA	2
24	R12954105	R12954105	A0185	.SUPPORT		EA	2
25	R12920021	R12920021	A0185	.SHEET		EA	1
26	R12920022	R12920022	A0185	.SHEET		EA	2
27	R12920023	R12920023	A0185	.SHEET		EA	2
28	R12920024	R12920024	A0185	.SHEET		EA	2
29	R12920025	R12920025	A0185	.SHEET		EA	2
30	R12920026	R12920026	A0185	.SHEET		EA	4
31	R12920027	R12920027	A0185	.SHEET		EA	2
32	R1292000010	0.13x0.26	Z9009	.RIVET, POP, SSD - 0.13x0.26 - - ATT.PT AISI 304			AR
33	R12920030	R12920030	A0185	.SUPPORT		EA	2

Seats Installation (Fig. 2-78)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-078- 34	R12920040	R12920040	A0185	.SCREW, HEX, SPECIAL - 5/16 - ATT.PT		EA	2
35	R1292000012	5/16-18 UNC ANSI B18.2.2aS1	Z9009	.NUT, HEX - 5/16-18 UNC ANSI - ATT.PT B18.2.2 - SSTL AISI 304CW		EA	2
36	R1292000013	R6-9	E0019	.RIVET, HUCK-BOM - R6-9 - ATT.PT		EA	4
37	R1292000014	R1292000014	A0185	.SHIM-3.94x0.59x0.12		EA	2
38	R1292000015	3/8-16 UNCx3/4 ANSI B18.2.1aS	Z9009	.BOLT, HEX-3/8-16 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304		EA	8
39	R1292000016	3/8 A ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE A - 3/8 A - ATT.PT ANSI B27.2 - SSTL AISI 304		EA	8
40	R1292000017	3/8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - 3/8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	8

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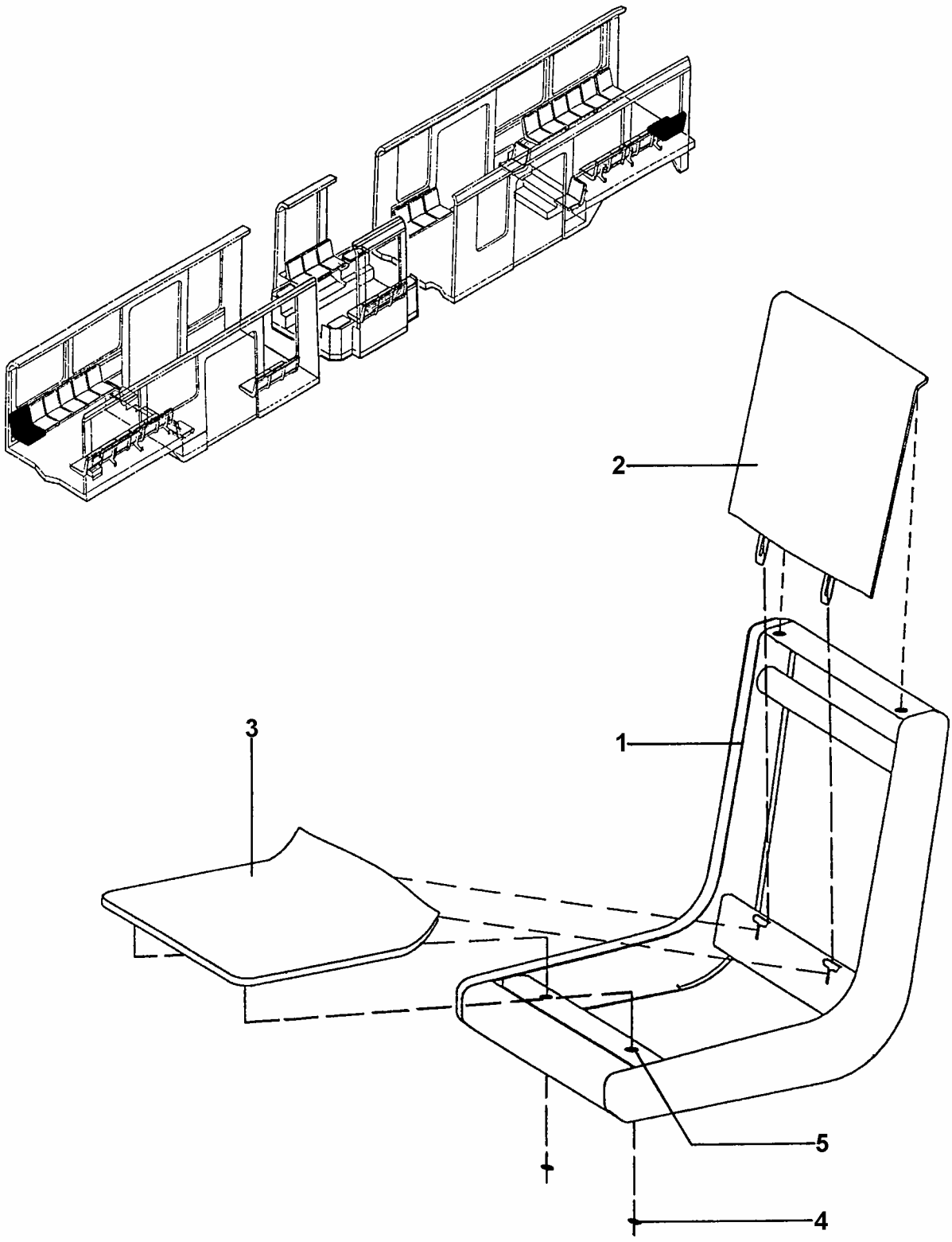

Figure 2-79 Seat, 1 Passenger Box Mount

Seat, 1 Passenger Box Mount (Fig. 2-79)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-079-	R12951001	3444014	B0024	SEAT, 1 PASSENGER BOX MOUNT - SEE FIG. 2-78 FOR NHA		EA	1
1	3444024	3444024	B0024	.SEAT, 1 PASSENGER BOX MOUNT, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	4
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	2

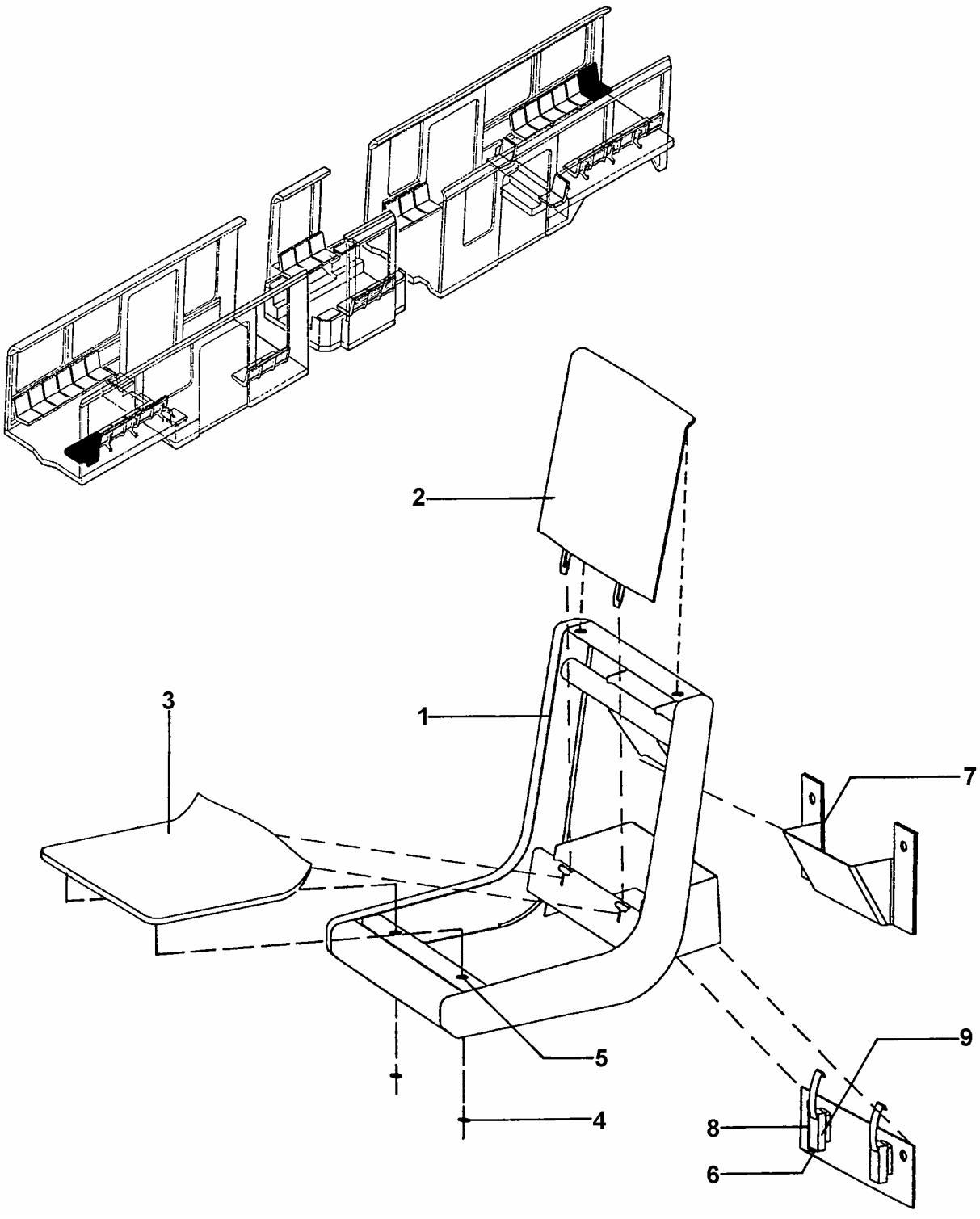

Figure 2-80 Seat, 1 Passenger Cantilever

Seat, 1 Passenger Cantilever (Fig. 2-80)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-080-	R12951000	3444015	B0024	SEAT, 1 PASSENGER CANTILEVER - SEE FIG. 2-78 FOR NHA		EA	1
1	3444025	3444025	B0024	.SEAT, 1 PASSENGER CANTILEVER, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	1
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	1
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	4
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	2
6	3443980	3443980	B0024	.LOWER WALL BRACKET WELDMENT		EA	1
7	3443978	3443978	B0024	.BRACKET, UPPER WALL, 1 PASS.		EA	1
8	3443975	3443975	B0024	.OVER-CENTER DRAW LATCH		EA	2
9	8010618	8010618	B0024	.SCREW, PPHMS - NO 8-32 X 1/4 - SSTL		EA	8

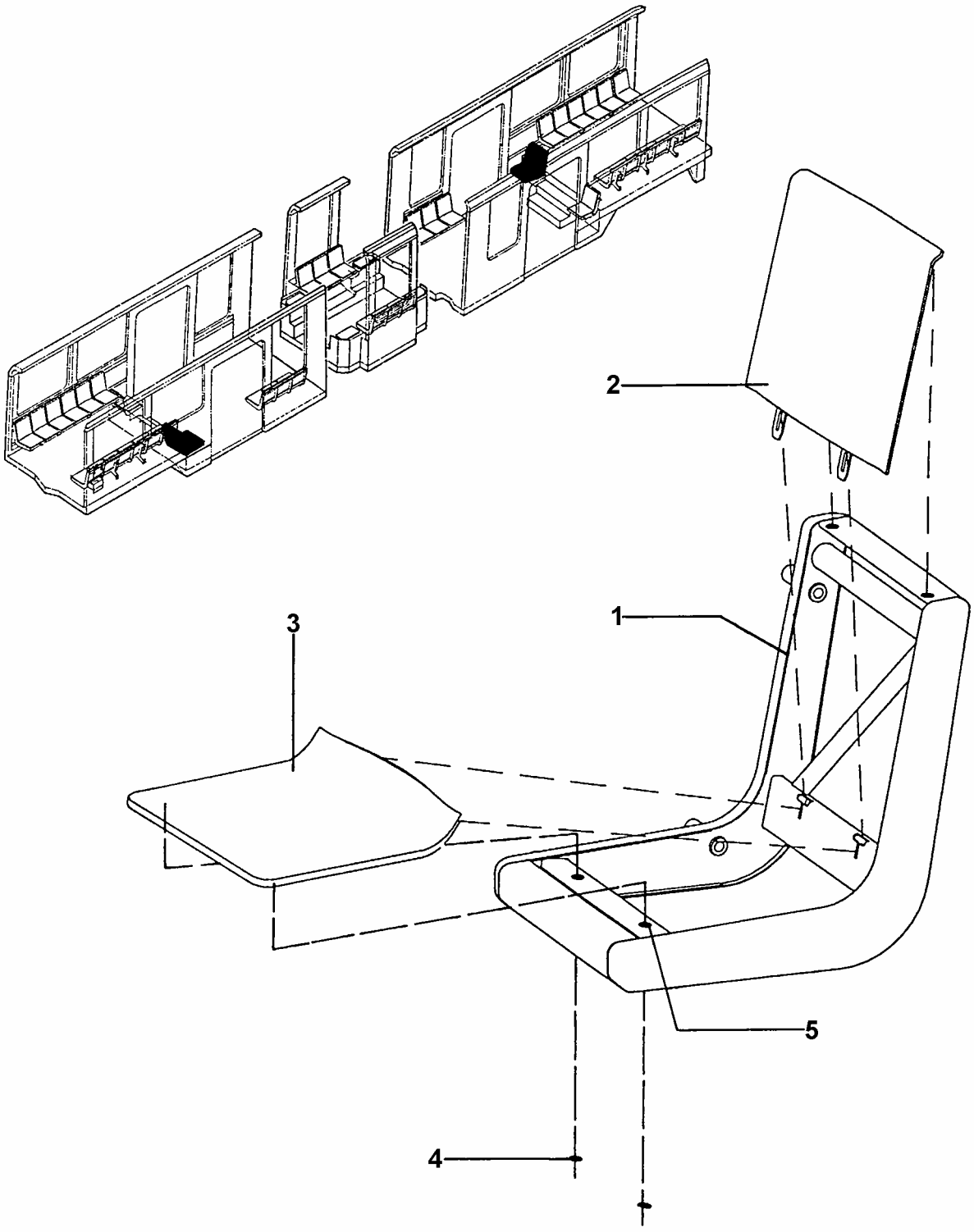

Figure 2-81 Seat, 1 Passenger Transversal, LH

Seat, 1 Passenger Transversal, LH (Fig. 2-81)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-081-	R12951002	3444017	B0024	SEAT, 1 PASSENGER TRANSVERSAL, LH - SEE FIG. 2-78 FOR NHA		EA	1
1	3444027	3444027	B0024	.SEAT, 1 PASSENGER TRANSVERSAL, RH, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	4
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	2

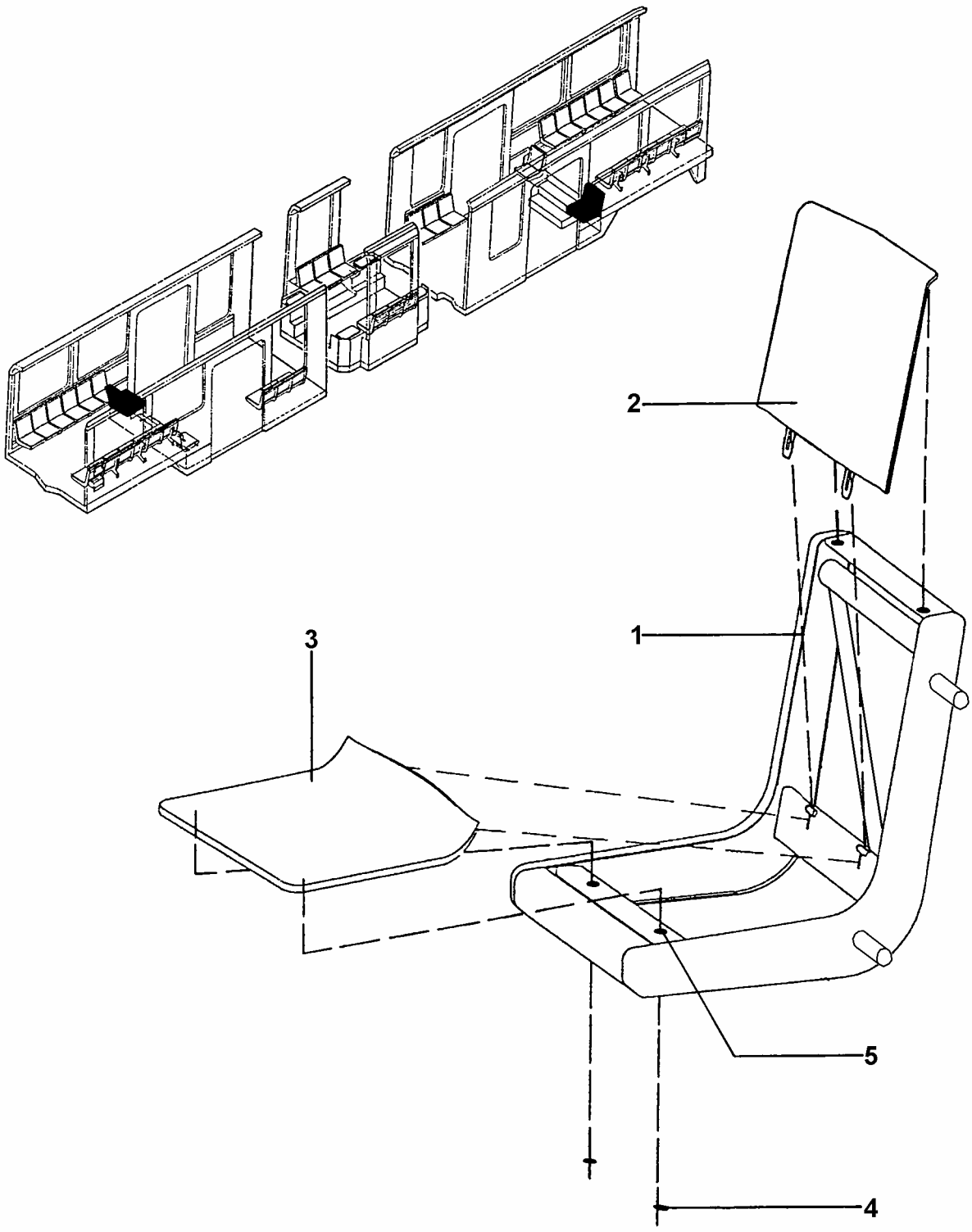

Figure 2-82 Seat, 1 Passenger Transversal, RH

Seat, 1 Passenger Transversal, RH (Fig. 2-82)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-082-	R12951003	3444016	B0024	SEAT, 1 PASSENGER TRANSVERSAL, RH - SEE FIG. 2-78 FOR NHA		EA	1
1	3444026	3444026	B0024	.SEAT, 1 PASSENGER TRANSVERSAL, LH, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	4
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	2

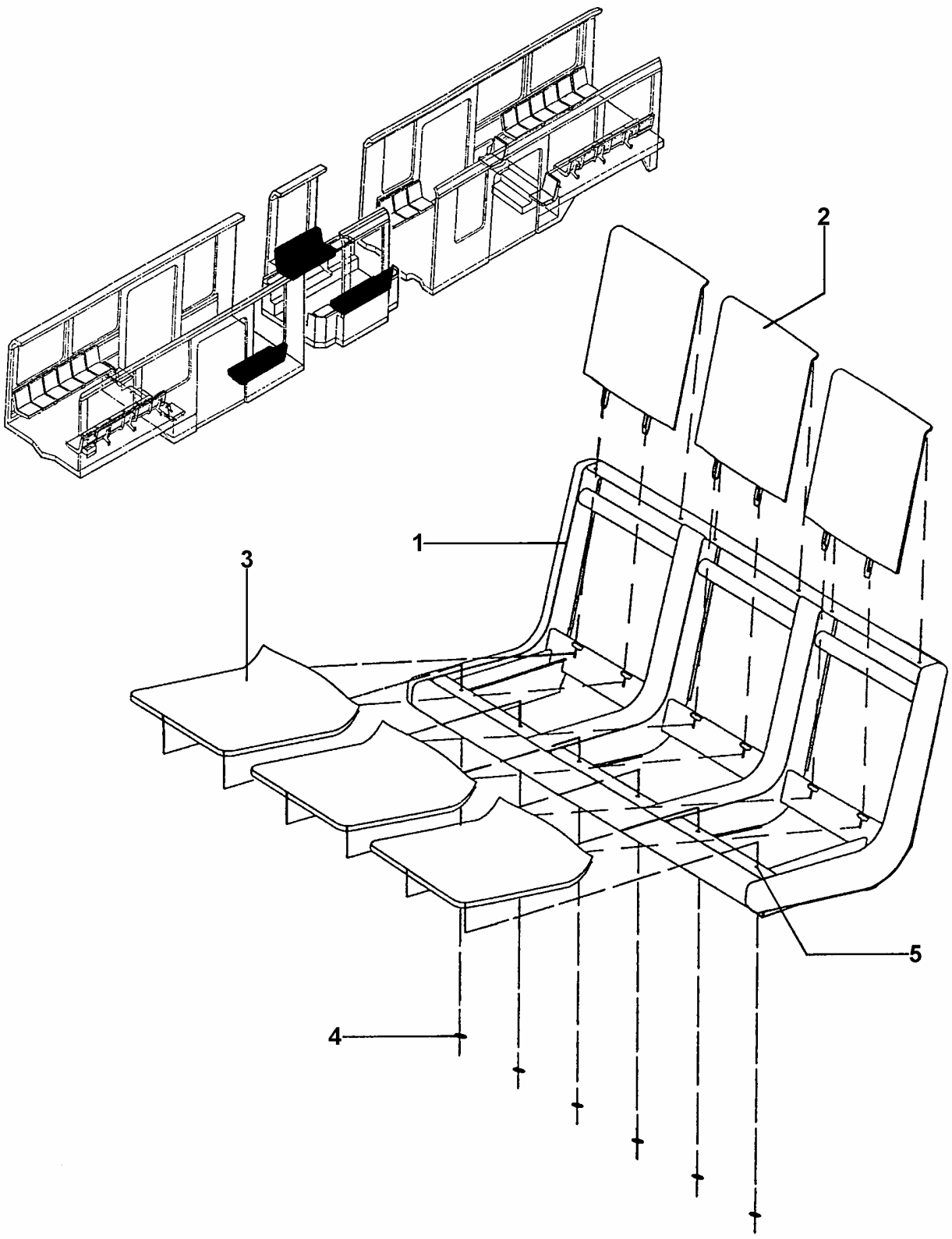

Figure 2-83 Seat, 3 Passenger Box Mount

Seat, 3 Passenger Box Mount (Fig. 2-83)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-083-	R12954000	3444011	B0024	SEAT, 3 PASSENGER BOX MOUNT - SEE FIG. 2-78 FOR NHA		EA	1
1	3444021	3444021	B0024	.SEAT, 3 PASSENGER BOX MOUNT, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	3
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	3
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	12[3]
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	6

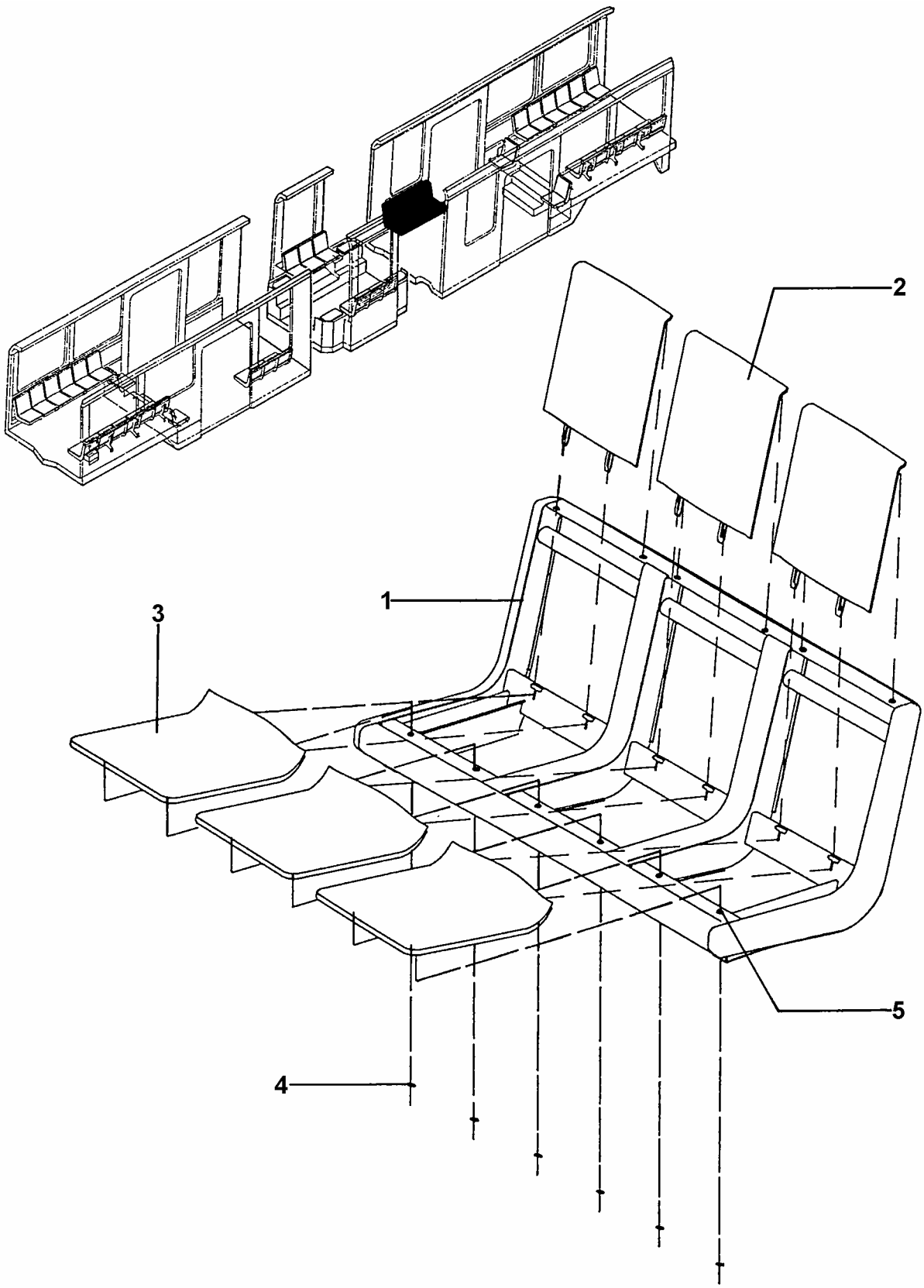

Figure 2-84 Seat, 3 Passenger Cantilever

Seat, 3 Passenger Cantilever (Fig. 2-84)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-084-	R12954001	3444010	B0024	SEAT, 3 PASSENGER CANTILEVER - SEE FIG. 2-78 FOR NHA		EA	1
1	3444020	3444020	B0024	.SEAT, 3 PASSENGER CANTILEVER, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	3
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	3
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	12
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	6

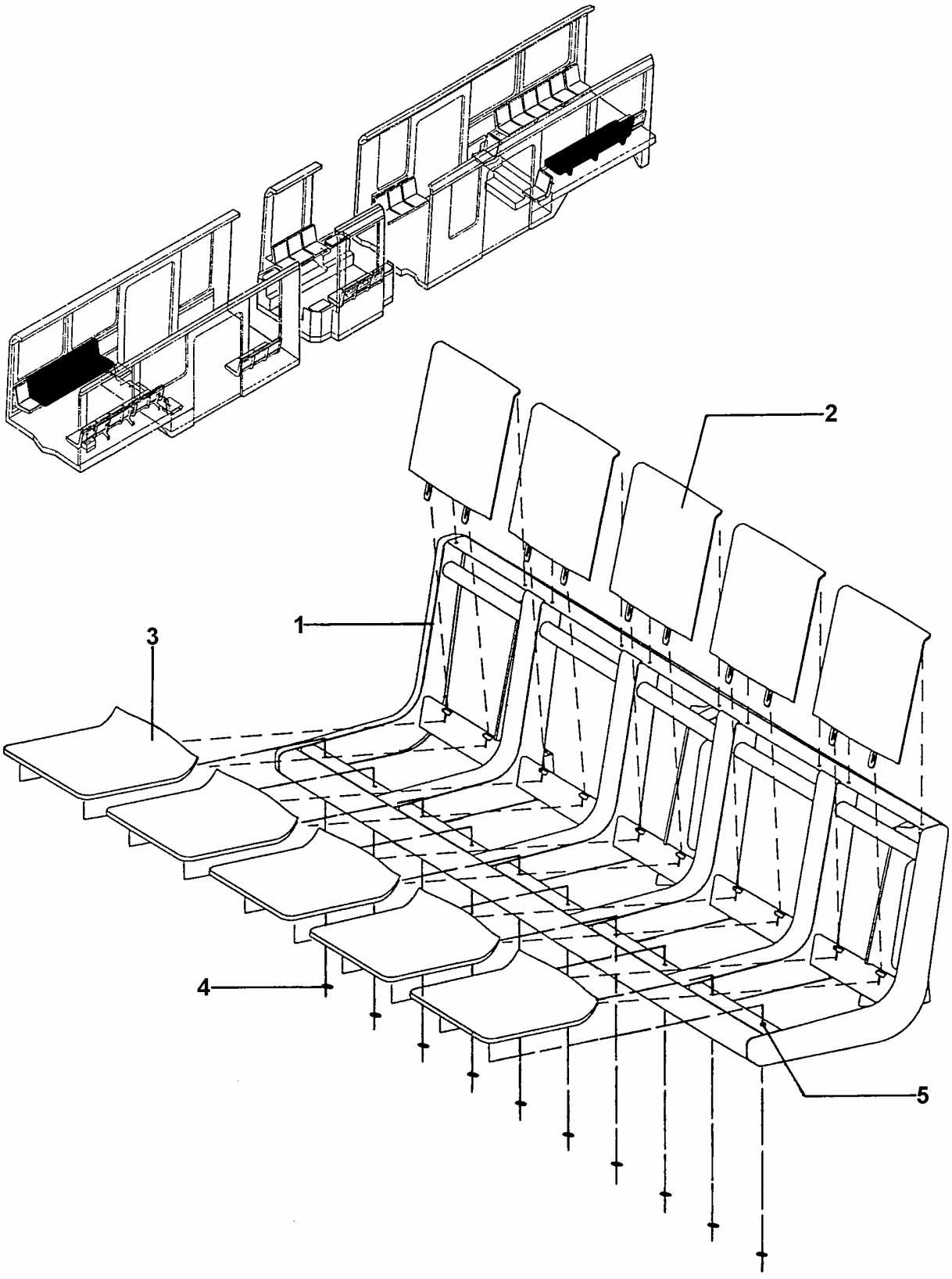

Figure 2-85 Seat, 5 Passenger, RH

Seat, 5 Passenger, RH (Fig. 2-85)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-085-	R12958000	3444013	B0024	SEAT, 5 PASSENGER, RH - SEE FIG. 2-78 FOR NHA		EA	1
1	3444023	3444023	B0024	.SEAT, 5 PASSENGER, RH, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	5
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	5
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	20
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	10

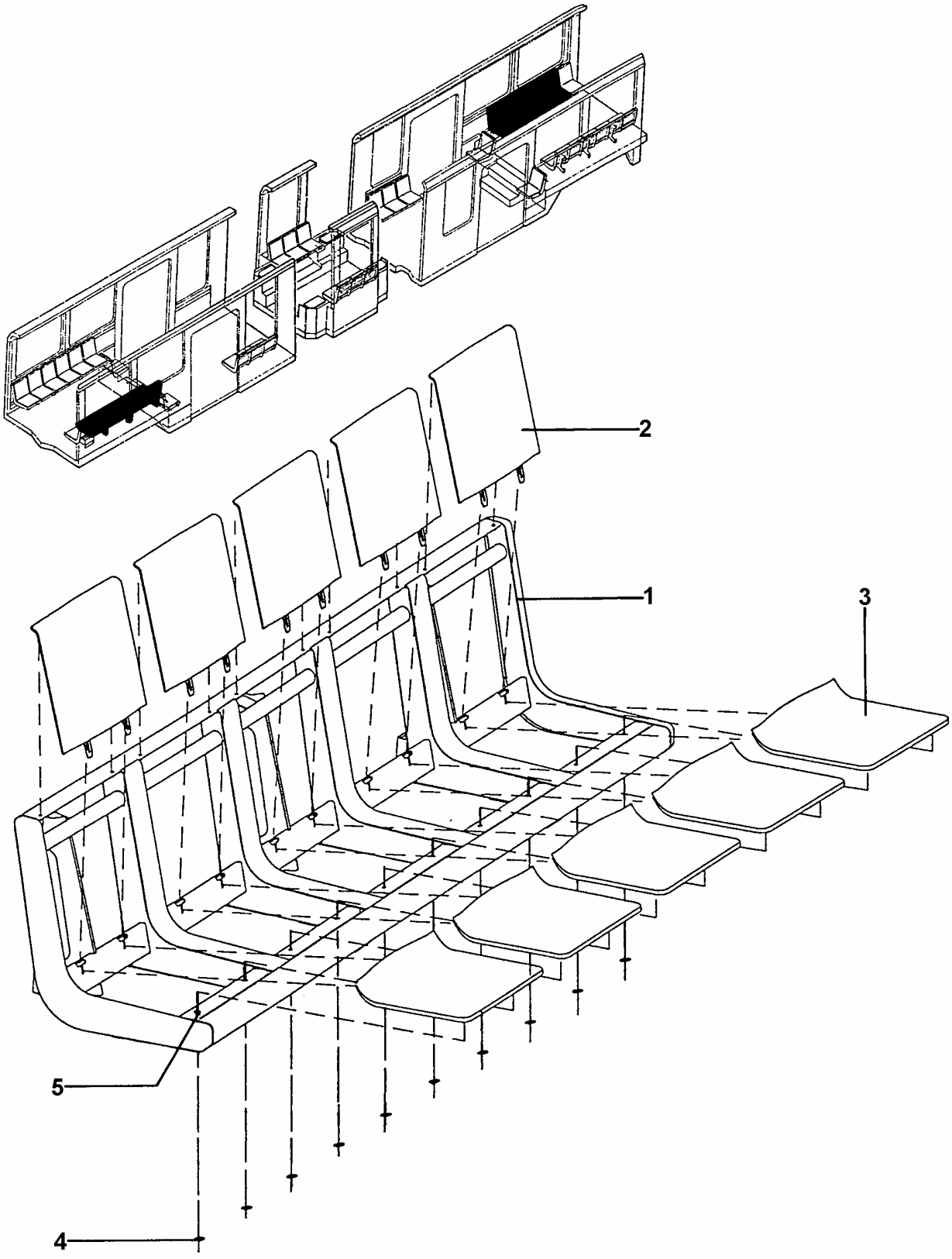

Figure 2-86 Seat, 5 Passenger, LH

Seat, 5 Passenger, LH (Fig. 2-86)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-086-	R12958001	3444012	B0024	SEAT, 5 PASSENGER, LH - SEE FIG. 2-78 FOR NHA		EA	1
1	3444022	3444022	B0024	.SEAT, 5 PASSENGER, LH, WELDMENT		EA	1
2	3444048	3444048	B0024	.SEAT BACK CUSHION ASSEMBLY		EA	5
3	3444049	3444049	B0024	.SEAT BOTTOM CUSHION ASSEMBLY		EA	5
4	8040008	8040008	B0024	.RIVET -1/8 X 0.265 - SSTL		EA	20
5	8133012	8133012	B0024	.BALL STUD RECEIVER		EA	10

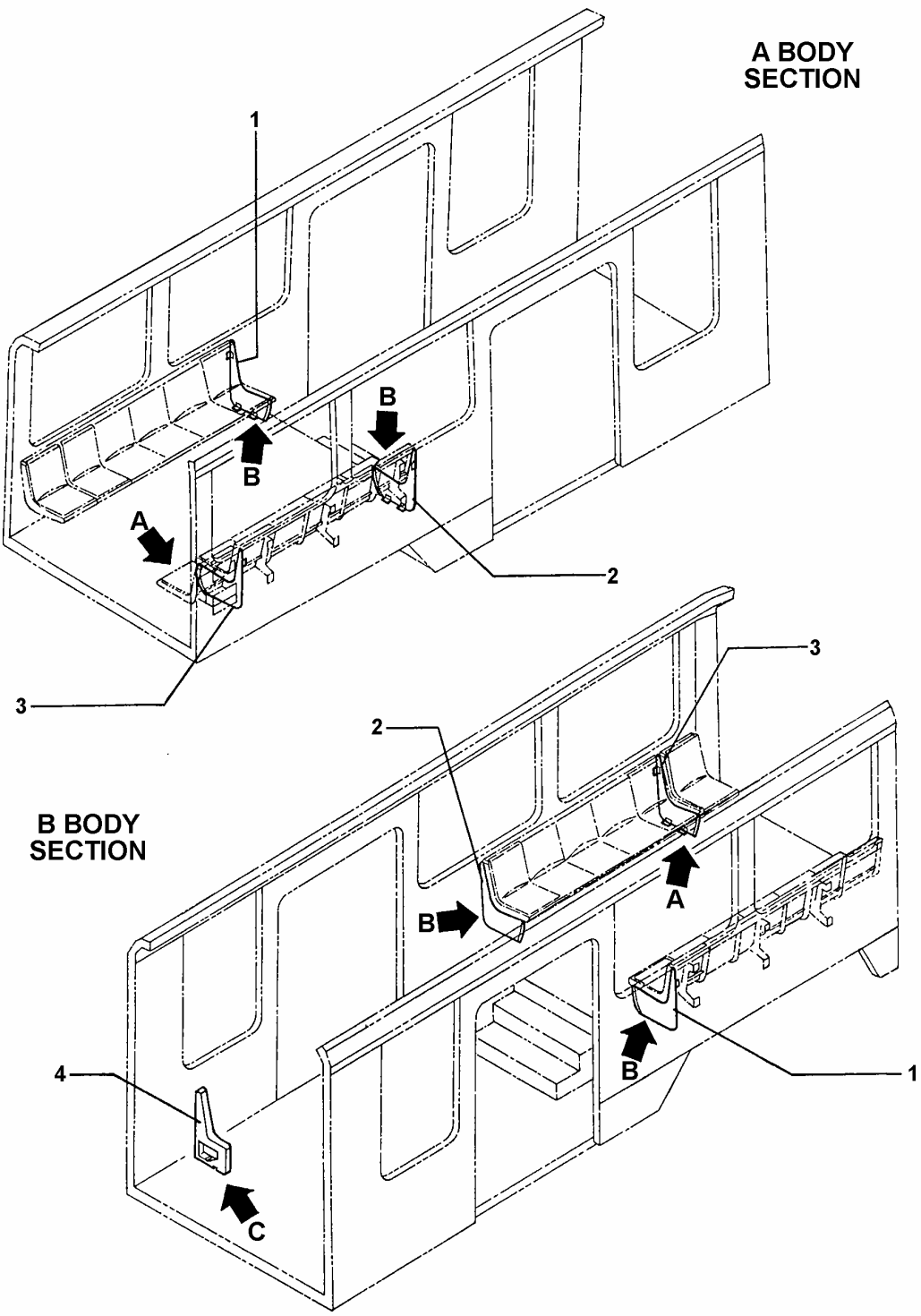

Figure 2-87 Walls By Seats Installation (Sheet 1 of 2)

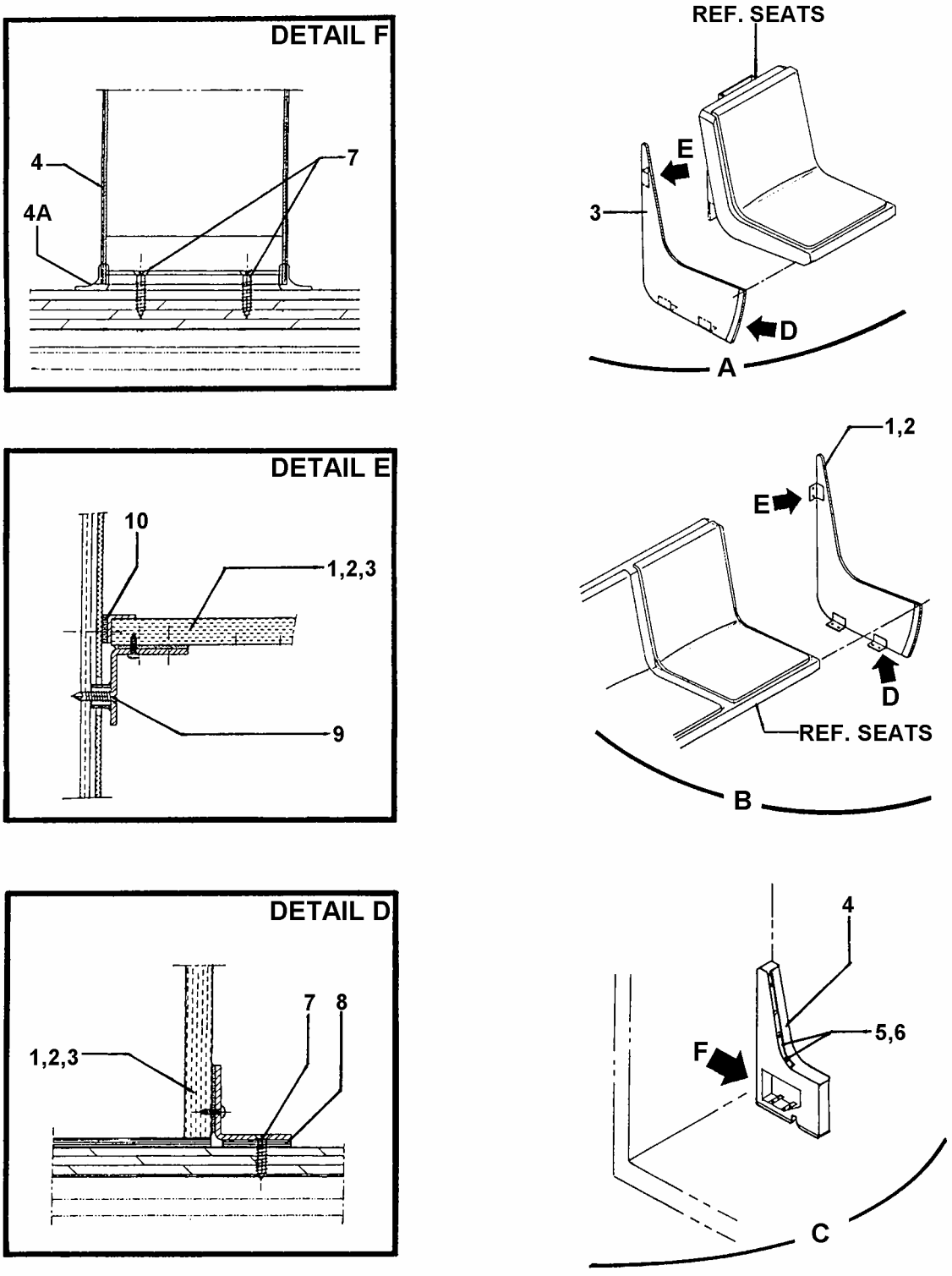

Figure 2-87 Walls By Seats Installation (Sheet 2 of 2)

Walls By Seats Installation (Fig. 2-87)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-087-	R12951500	R12951500	A0185	WALLS BY SEATS INSTALLATION		EA	1
1	R12951504	R12951504	A0185	.PANEL		EA	2
2	R12951502	R12951502	A0185	.PANEL		EA	2
3	R12951503	R12951503	A0185	.PANEL		EA	2
4	R12951620	R12951620	A0185	.FAIRING		EA	1
4A	R12951631	R12951631	A0185	..GASKET		EA	1
5	R12951642	R12951642	A0185	.FINISH PROFILE		EA	1
6	R129515004	M3.9x16 mm ANSI B18.6.4d1	Z9009	.SCREW, TAPPING TYPE AB, - ATT.PT FLAT CTSK HD - M3.9x16 mm ANSI B18.6.4		EA	4
7	R129515001	NO 8x1 ANSIB18.6.1aS	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x1 ANSI B18.6.1 - SSTL AISI 304A		EA	30
8	R12951621	R12951621	A0185	.GASKET-0.16x1.57x2.36		EA	12
9	R129515002	NO 8-32 UNCx1 ANSI B18.6.4dN	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1 ANSI B18.6.4 - STL ZNP		EA	24
10	R12951640	R12951640	A0185	.LOWER GASKET - 0.12x0.59x11.8		EA	6

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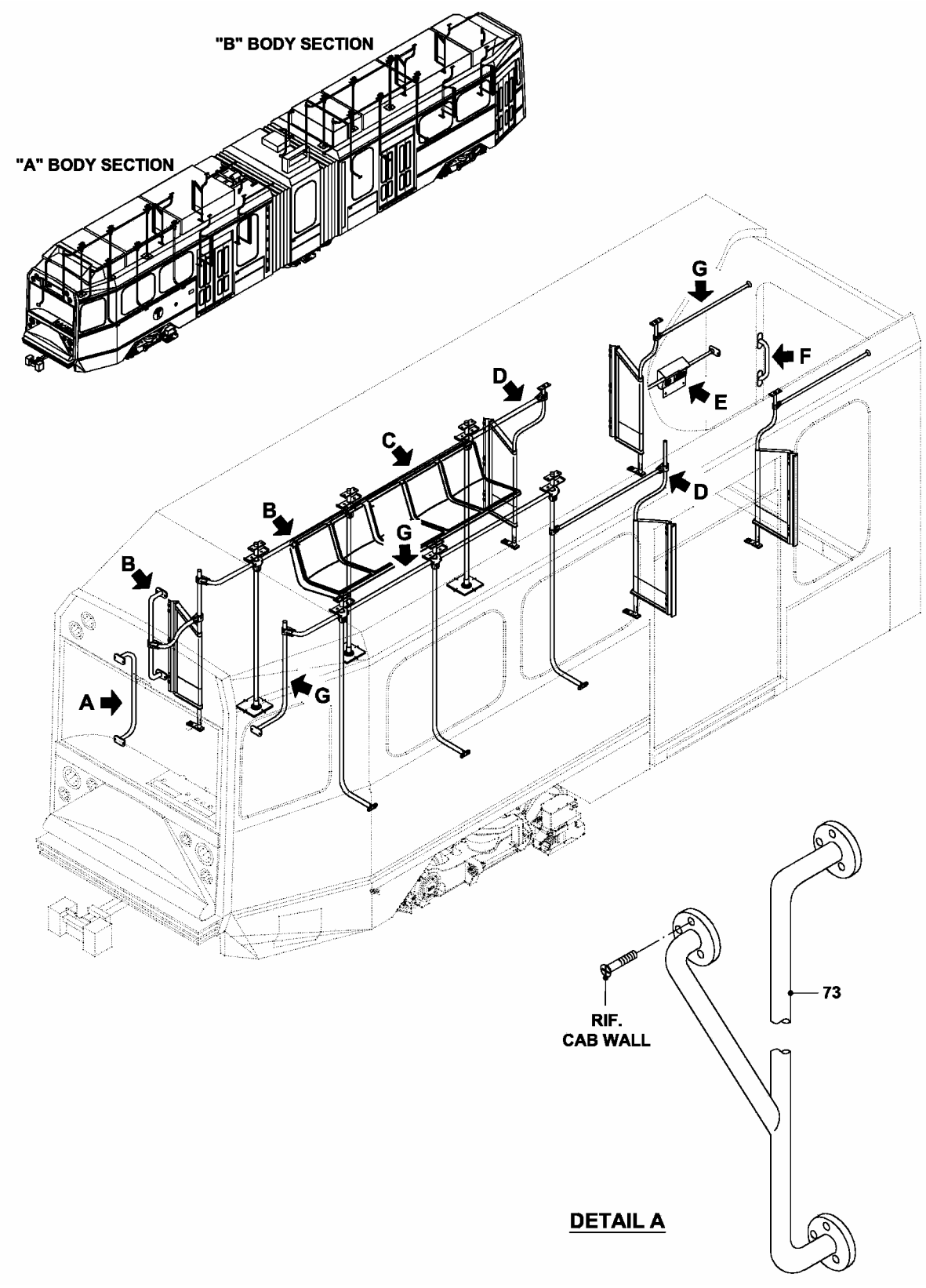

Figure 2-88 Stanchions And Handrails Installation (Sheet 1 of 6)

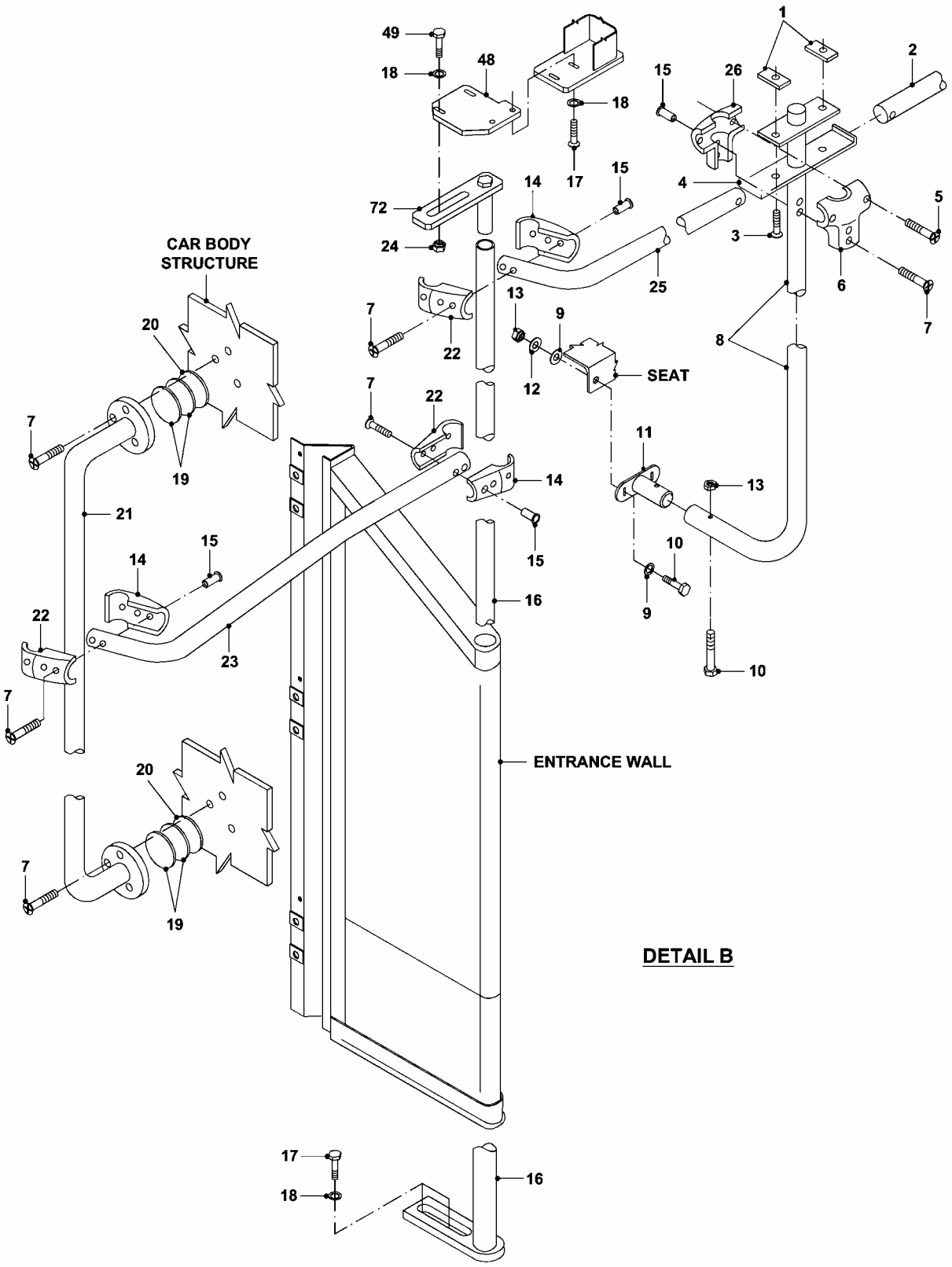

Figure 2-88 Stanchions And Handrails Installation (Sheet 2 of 6)

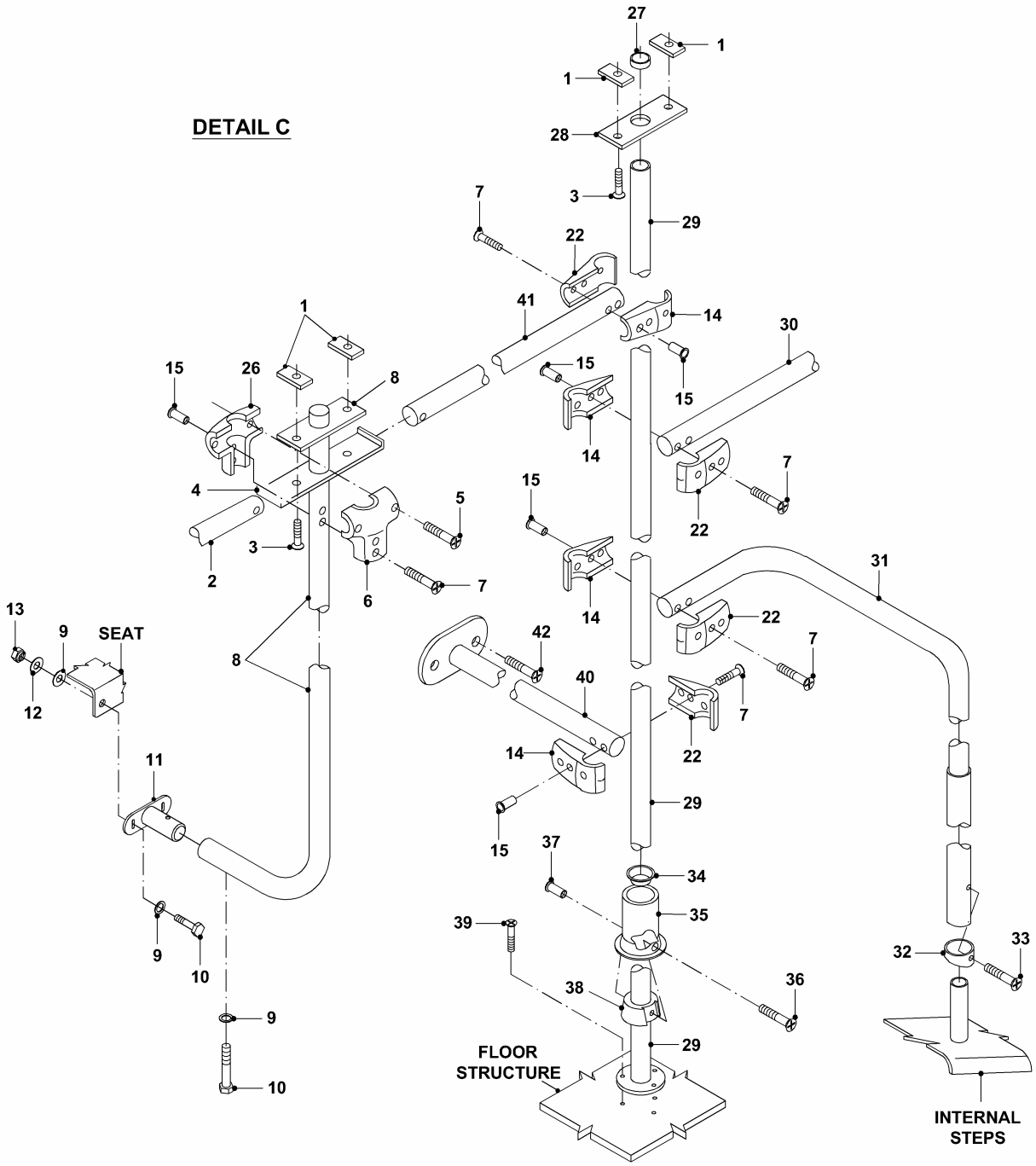

Figure 2-88 Stanchions And Handrails Installation (Sheet 3 of 6)

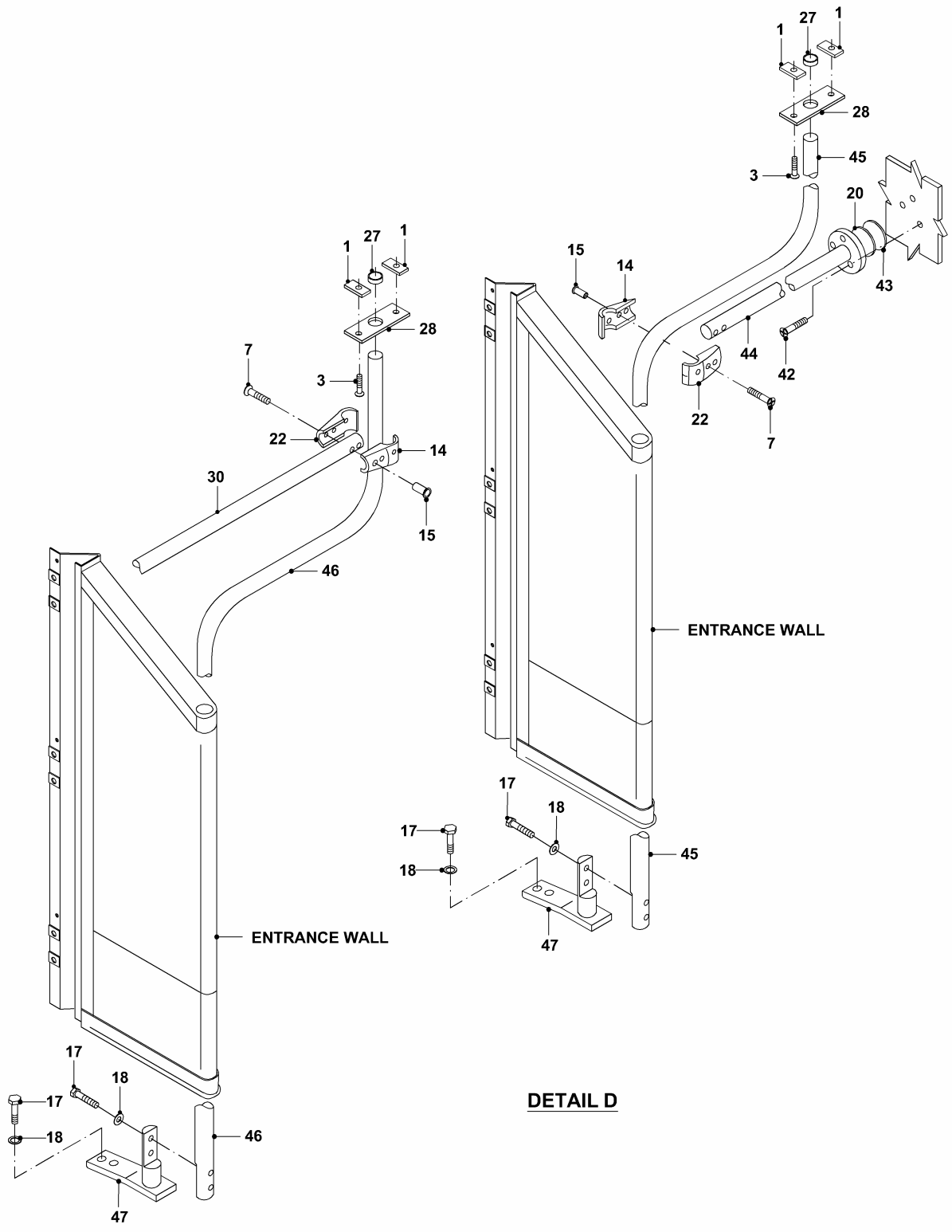

Figure 2-88 Stanchions And Handrails Installation (Sheet 4 of 6)

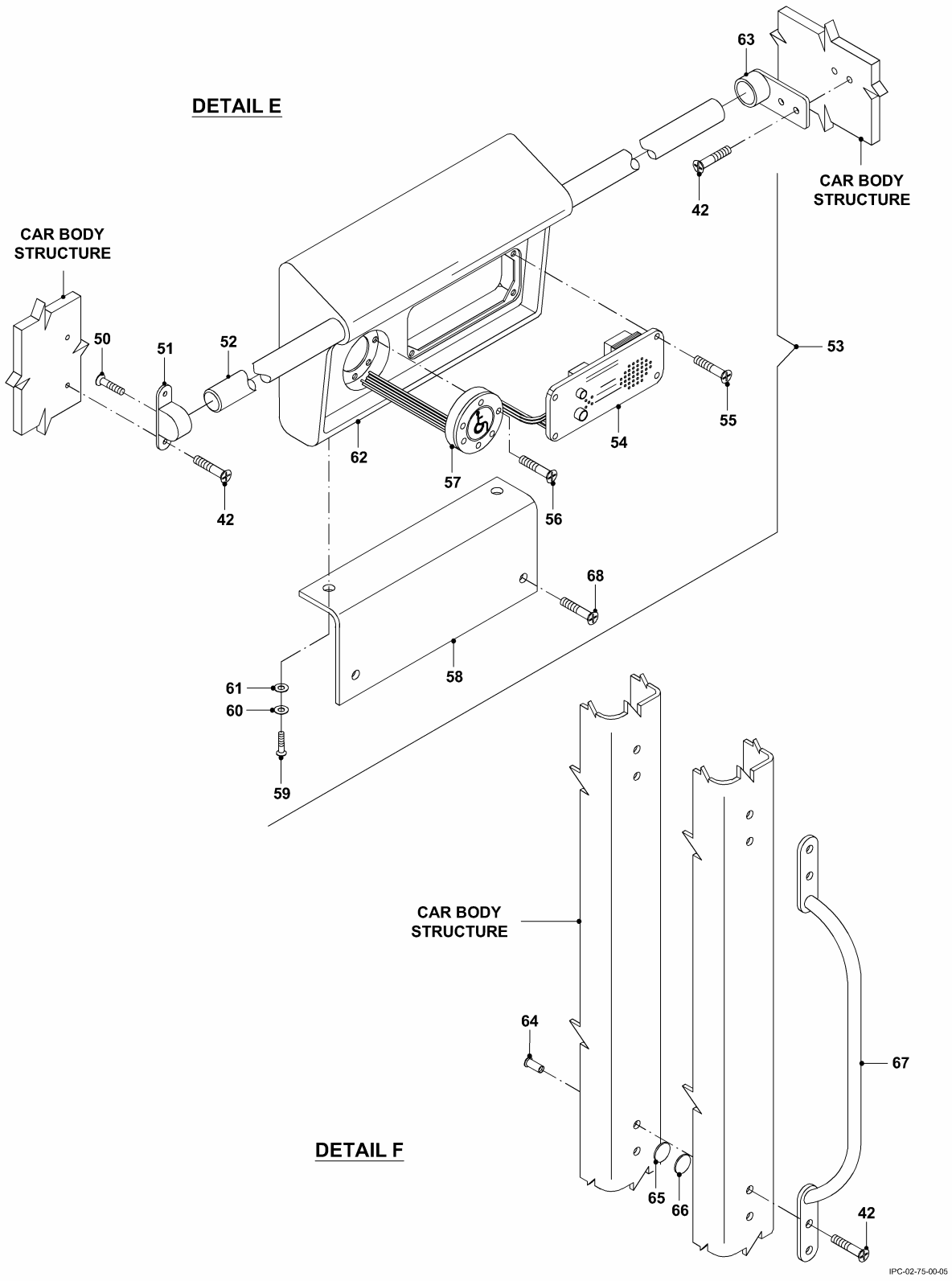

Figure 2-88 Stanchions And Handrails Installation (Sheet 5 of 6)

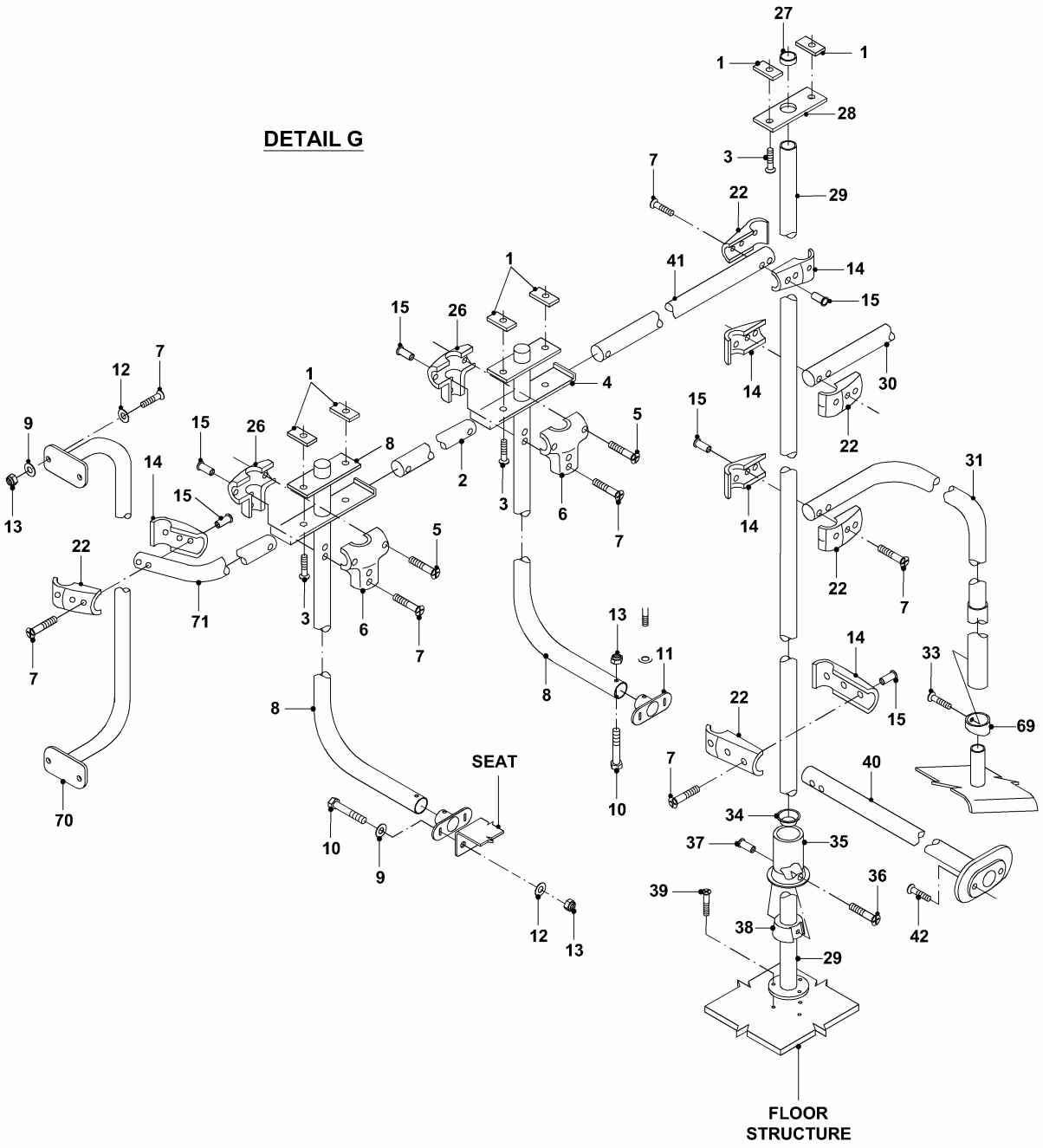

Figure 2-88 Stanchions And Handrails Installation (Sheet 6 of 6)

Stanchions And Handrails Installation (Fig. 2-88)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-088-	R12990101	R12990101	A0185	STANCHIONS AND HANDRAILS INSTALLATION		EA	1
1	R12990235	R12990235	A0185	.PLATE, TH		EA	40
2	R12990205	R12990205	A0185	.STANCHION		EA	4
3	R129901017	5/16-18 UNCx7/8 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - 5/16-18 UNCx7/8 ANSI B18.3 - SSTL AISI 304		EA	40
4	R12990234	R12990234	A0185	.PLATE, TH		EA	16
5	R1299010110	TAP.D 610 BS	Z9009	.RIVET, POP - TAP.D 610 BS - ATT.PT		EA	16
6	R12990230	R12990230	A0185	JUNCTION		EA	8
7	R129901019	1/4-20 UNCx1 -1/4 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT -1/4-20 UNCx1-1/4 ANSI B18.3 - SSTL AISI 304		EA	136
8	R12990212	R12990212	A0185	.STANCHION		EA	8
9	R1299010115	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI B27.2 - SSTL AISI 304 - ATT.PT		EA	48
10	R1299010113	1/4-20 UNCx1-1/8 ANSI B18.2.1aS	Z9009	.BOLT, HEX -1/4-20 UNCx1-1/8 ANSI B18.2.1 - SSTL AISI 304 - ATT.PT		EA	24
11	R12990237	R12990237	A0185	.BRACKET		EA	8
12	R1299010116	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 ANSI B27.1 - SSTL AISI 302 - ATT.PT		EA	24
13	R1299010114	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI B18.2.2- SSTL AISI 304 - ATT.PT		EA	24
14	R12990228	R12990228	A0185	JUNCTION		EA	32
15	R12990233	R12990233	A0185	.SCREW, SPECIAL - ATT.PT		EA	116
16	R12990211	R12990211	A0185	.STANCHION		EA	2
17	R129901013	5/16-18 UNCx1 ANSI B18.2.1cS	Z9009	.SCREW, HEX - 5/16-18 UNCx1 ANSI B18.2.1 - SSTL AISI 304A - ATT.PT		EA	40
18	R129901014	5/16 ANSI B27.2-S	Z9009	.WASHER, PLAIN - 5/16 ANSI B27.2 - SSTL AISI 304 - ATT.PT		EA	46
19	R12990294	R12990294	A0185	.SHIM		EA	8
20	R12990299	R12990299	A0185	.SHIM		EA	8
21	R12990201	R12990201	A0185	.HANDRAIL		EA	2
22	R12990229	R12990229	A0185	JUNCTION		EA	32
23	R12990245	R12990245	A0185	.HANDRAIL		EA	2
24	R129901015	5/16-18 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX - 5/16-18 UNC ANSI B18.2.2- SSTL AISI 304 - ATT.PT		EA	4
25	R12990204	R12990204	A0185	.HANDRAIL		EA	2
26	R12990231	R12990231	A0185	JUNCTION		EA	8
27	R12990227	R12990227	A0185	.RING		EA	4
28	R12990226	R12990226	A0185	.SUPPORT		EA	4
29	R12990219	R12990219	A0185	.STANCHION		EA	4
30	R12990249	R12990249	A0185	.STANCHION		EA	4
31	R12990208	R12990208	A0185	.HANDRAIL		EA	4
32	R12990288	R12990288	A0185	.PIPE		EA	2
33	R1299010117	NO10-24UNCx3/16ANSI B18.3dS	Z9009	.SCREW, SET, HEX SOCKET - NO 10-24 UNCx3/16 ANSI B18.3 - SSTL AISI 304 - ATT.PT		EA	4
34	R12990220	R12990220	A0185	.BUSHING		EA	4
35	R12990221	R12990221	A0185	.COVER		EA	4
36	R12990224	R12990224	A0185	.SCREW, SPECIAL - ATT.PT		EA	4
37	R12990225	R12990225	A0185	.SCREW, SPECIAL - ATT.PT		EA	4
38	R12990222	R12990222	A0185	.SPACER		EA	4

Stanchions And Handrails Installation (Fig. 2-88)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-088- 39	R129901011	NO 12x1 ANSI B18.6.1a1S	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 12x1 ANSI B18.6.1 - SSTL AISI 304A		EA	12
40	R12990207	R12990207	A0185	.STANCHION		EA	4
41	R12990206	R12990206	A0185	.STANCHION		EA	4
42	R129901018	1/4-20 UNCx1 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - -1/4-20 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	44
43	R12990295	R12990295	A0185	.SHIM		EA	4
44	R12990209	R12990209	A0185	.STANCHION		EA	4
45	R12990213	R12990213	A0185	.STANCHION		EA	4
46	R12990248	R12990248	A0185	.STANCHION		EA	4
47	R12990217	R12990217	A0185	.BRACKET		EA	8
48	R12990238	R12990238	A0185	.PLATE		EA	2
49	R1299010121	5/16-18 UNCx1-1/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX - 5/16-18 - ATT.PT UNCx1-1/4 ANSI B18.2.1 - SSTL AISI 30		EA	4
50	R1299010120	NO 8-32 UNCx1/2 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	2
51	R12990276	R12990276	A0185	.SUPPORT		EA	2
52	R12990277	R12990277	A0185	TUBE		EA	2
53	R12990242	R12990242	A0185	.BOX ASSY, PASSENGER EMERGENCY INTERCOM		EA	2
54	R12466111	N840-6110-001	B0023	..INTERCOM ASSY, PASSENGER EMERGENCY (A3) - SEE FIG. 12-4 FOR DETAIL		EA	1
55	R129902422	NO 10-24 UNCx1 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx1 ANSI B18.3 - SSTL AISI 304		EA	4
56	R129902423	NO 10-24 UNCx1-1/4 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 10-24 UNCx1-1/4 ANSI B18.3-SSTL AISI 304		EA	6
57	R12354222	59631343	E0017	..PUSHBUTTON, BRIDGEPLATE REQUEST - SEE FIG. 4-37 FOR DETAIL		EA	1
58	R12990286	R12990286	A0185	..BRACKET		EA	1
59	R129902421	NO 8-32 UNCx5/8 ANSI B18.6.4eS	Z9009	..SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.4 - SSTL AISI 304		EA	2
60	R129902425	NO 8 ANSI B27.1 - S	Z9009	..WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	2
61	R129902424	NO 8 ANSI B27.2 - S	Z9009	..WASHER, PLAIN - NO 8 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	2
62	R12990282	R12990282	A0185	..PANEL, FIBERGLASS		EA	1
63	R12990244	R12990244	A0185	.SUPPORT		EA	1
64	R129901012	1/4-UNC-RS	Z9009	.RIVET NUT, RD HD, FASTENER - ATT.PT -1/4-UNC-SSTL AISI 304		EA	16
65	R12990298	R12990298	A0185	.SHIM		EA	8
66	R12990297	R12990297	A0185	.SHIM		EA	8
67	R12990246	R12990246	A0185	.HANDRAIL		EA	4
68	R1299010112	NO 8-32 UNCx1 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	4
69	R12990289	R12990289	A0185	.PIPE		EA	2
70	R12990202	R12990202	A0185	.HANDRAIL		EA	2

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Stanchions And Handrails Installation (Fig. 2-88)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-088- 71	R12990203	R12990203	A0185	.STANCHION		EA	2
72	R12990218	R12990218	A0185	.SUPPORT		EA	2
73	R12990239	R12990239	A0185	.HANDRAIL - SEE FIG. 2-31 FOR INSTALLATION		EA	2

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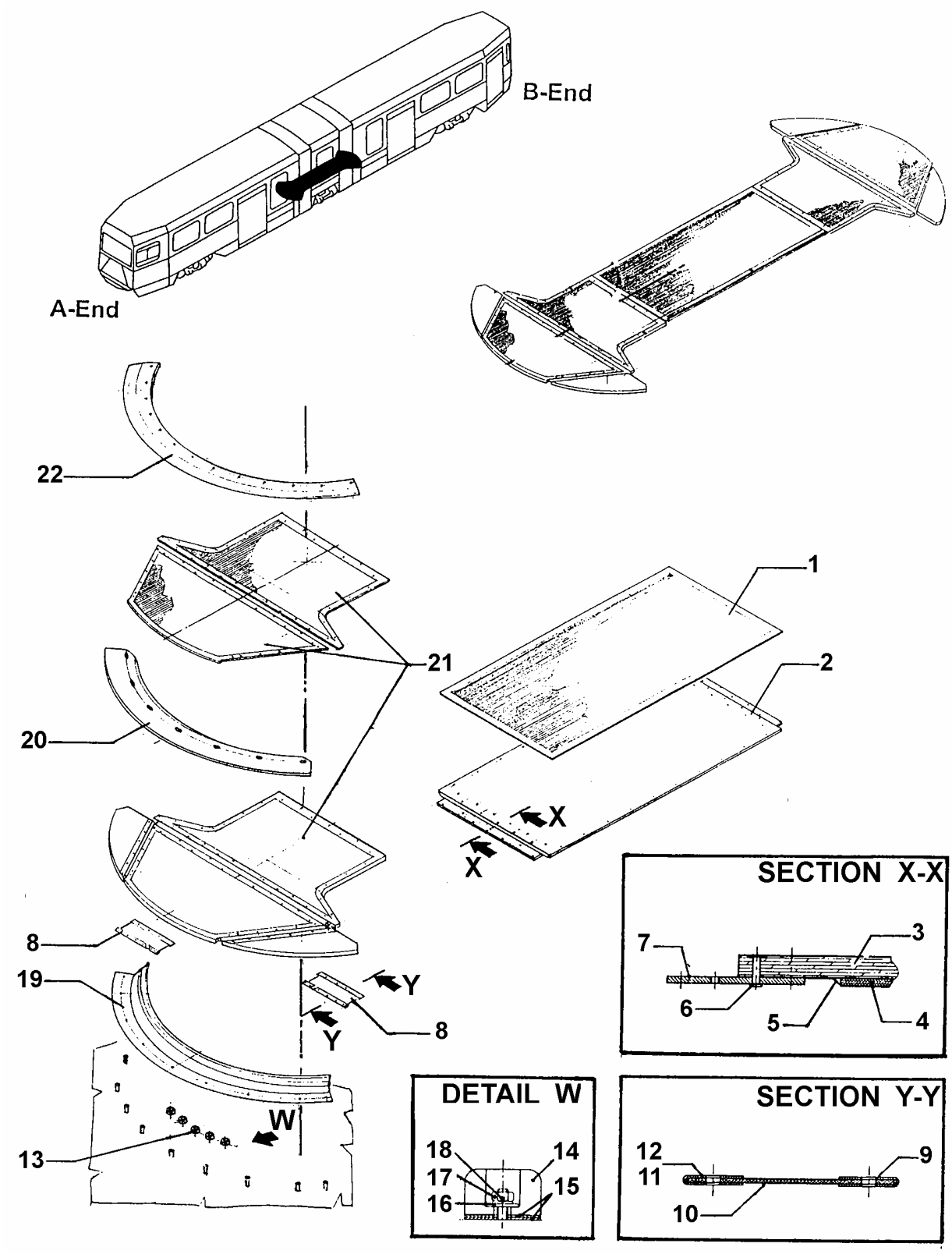


Figure 2-89 Floor Assembly

Floor Assembly (Fig. 2-89)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-089-	R12375100	R12375100	A0185	FLOOR ASSEMBLY		EA	1
1	R12375251	R12375251	A0185	.RUBBER FLOORING		EA	1
2	R12375110	R12375110	A0185	.CENTRAL FLOOR ASSY		EA	1
3	R12375111	R12375111	A0185	..CENTRAL FLOOR		EA	1
4	R12375233	R12375233	A0185	..CENTRAL PANEL		EA	1
5	R12375240	R12375240	A0185	..PAN		EA	1
6	R123752401	0.19x0.98	Z9009	..RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	22
7	R12375112	R12375112	A0185	..UNION PLAT		EA	2
8	R12375160	R12375160	A0185	.GASKET		EA	4
9	R12375164	R12375164	A0185	..PLATE		EA	1
10	R12375161	R12375161	A0185	..GASKET - THK 0.12 - NEOPRENE		EA	1
11	R12375163	R12375163	A0185	..PLATE		EA	1
12	R12375162	R12375162	A0185	..PLATE		EA	1
13	R12375340	R12375340	A0185	.PLATE, BEARING		EA	2
14	R12375341	R12375341	A0185	..SPACING BLOCK -TEFLON		EA	5
15	R12375342	R12375342	A0185	..SHIM-THK0.06		EA	6
16	R123753403	1/4AANSIB27.2-S	Z9009	..WASHER, PLAIN TYPE A-1/4 - ATT.PT A ANSI B27.2 - SSTL AISI 304		EA	5
17	R123753402	1/4 ANSI B27.1 -S	Z9009	..WASHER, HEL SPRING -1/4 ANSI B27.1 - SSTL AISI 302		EA	5
18	R123753401	1/4-20 UNC ANSI B18.2.2aS	Z9009	..NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	5
19	R12375170	R12375170	A0185	.BRUSH		EA	2
20	R12375330	R12375330	A0185	.BUTT FLAP		EA	2
21	R12375150	R12375150	A0185	.MOVING FLOOR ASSY - SEE FIG. 2-90 FOR DETAIL		EA	2
22	R12375320	R12375320	A0185	.BUTT STRAP		EA	2
23	R123751001	NO 10x7/8	Z9009	.SCREW, HEX SCH CAP - NO 10 - ATT.PT x 7/8 - SSTL AISI 304		EA	26
24	R123751009	NO10BANSIB27.2-S	Z9009	.WASHER, PLAIN TYPE B - NO - ATT.PT 10 B ANSI B27.2 - SSTL AISI 304		EA	26
25	R123751004	NO10STC512-S	Z9009	.NUT, SELF-LOCKING - NO 10 - ATT.PT STC 512-TYPES STC 512		EA	26
26	R123751003	1/4 ANSI B27.2-S	Z9009	.WASHER, PLAIN -1/4 ANSI - ATT.PT B27.2 - SSTL AISI 304		EA	18
27	R123751002	1/4STC512-S	Z9009	.NUT, SELF-LOCKING-1/4 STC - ATT.PT 512-TYPES STC 512		EA	18
28	R123751006	0.19x0.98	Z9009	.RIVET, TAC - 0.19x0.98 - SSTL - ATT.PT AISI 304		EA	20
29	R123751005	1/4x1-1/4 STC 513-S	Z9009	.SCREW, FLAT CTSK HD - - ATT.PT 1/4x1-1/4 STC 513 - TYPE S STC 513		EA	20
30	R123751007	NO 10-24 UNCx1/2 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - NO 10-24 UNCx1/2 ANSI B18.3 - SSTL AISI 304		EA	52
31	R12375102	R12375102	A0185	.MOLDING		EA	2
32	R12375101	R12375101	A0185	.ADHESIVE RUBBER STRIPE - 1.57x0.2			AR
33	R123751008	NO 10-24 UNCx1-1/4 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT - NO 10-24 UNCx1-1/4 ANSI B18.3 - SSTL AISI 304		EA	14

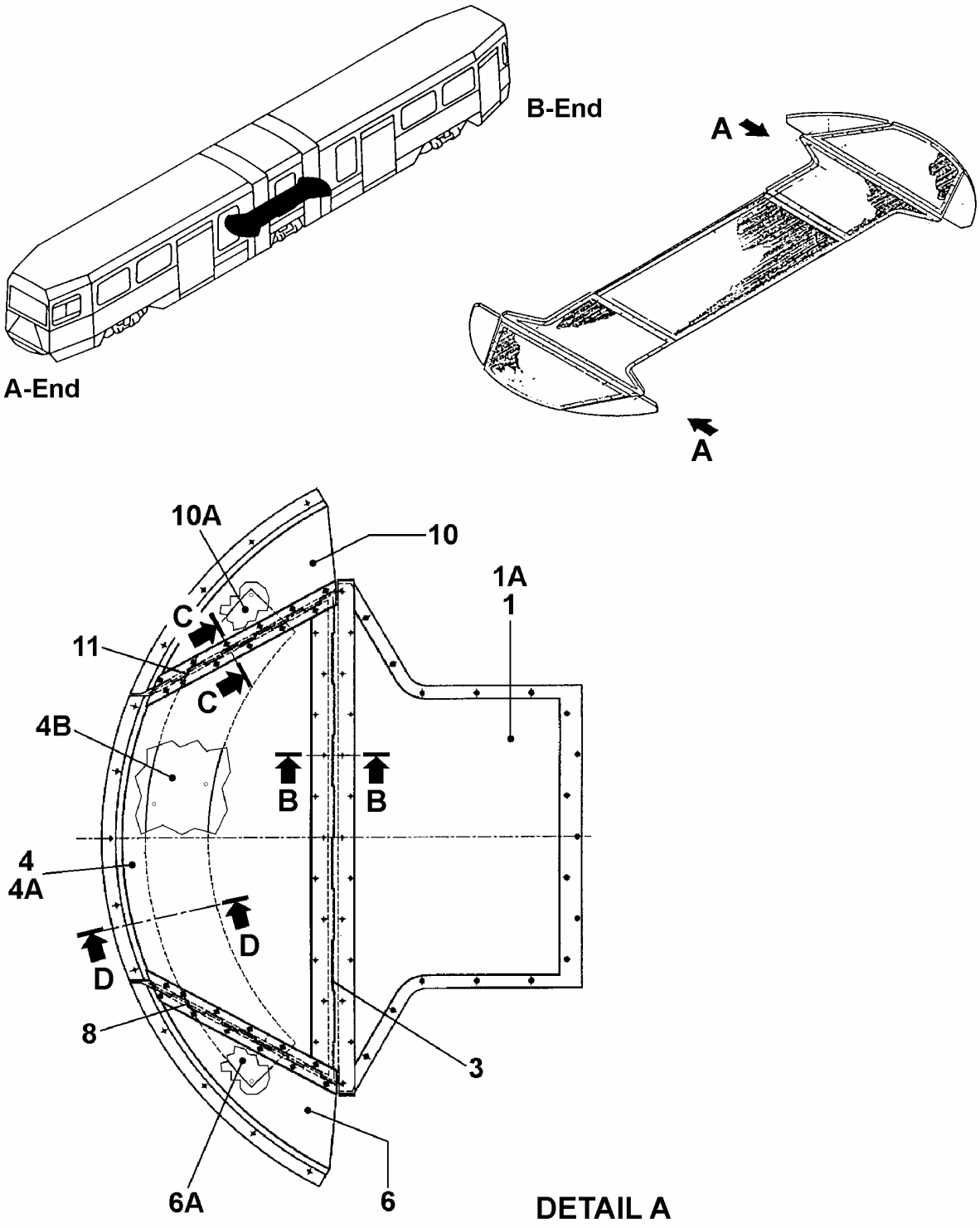
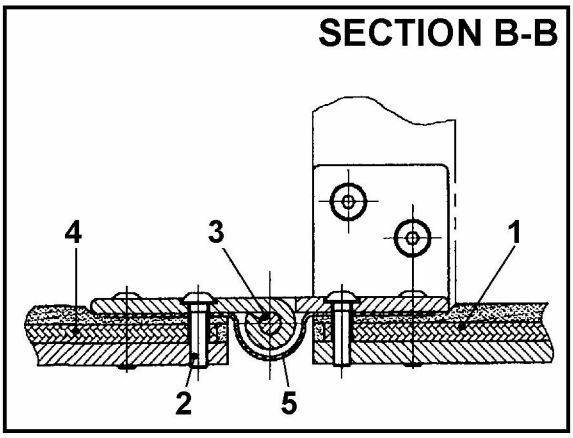
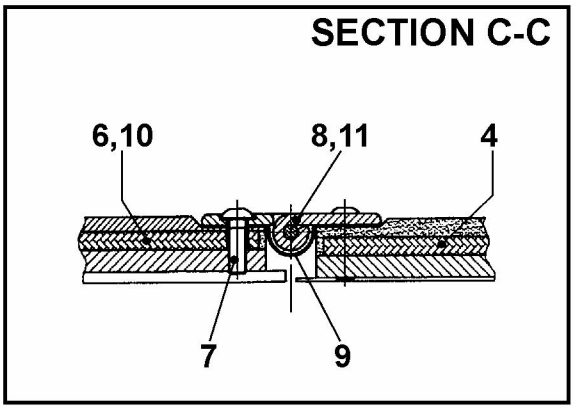


Figure 2-90 Moving Floor Assy (Sheet 1 of 2)

ITEM 2 & 7 REPLACED, ITEM 12,13,14,15 & 16 ADDED AS PER CFG 1139.
FOR MODIFIED DRAWING REFER WORK INSTRUC-TIONS OF CFG 1139 REV 0





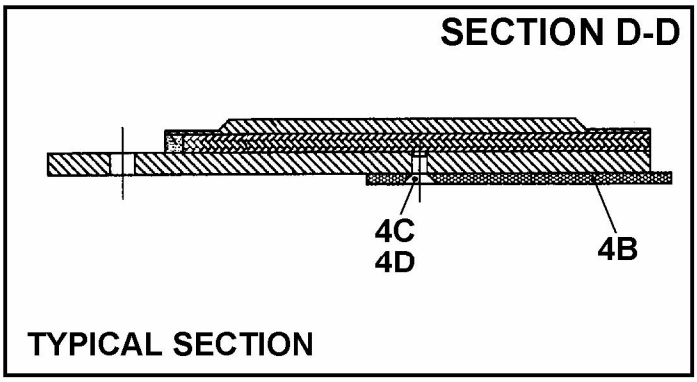


Figure 2-90 Moving Floor Assy (Sheet 2 of 2)

Moving Floor Assy (Fig. 2-90)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-090-	R12375150	R12375150	A0185	MOVING FLOOR ASSY - SEE FIG. 2-89 FOR NHA		EA	1
1	R12375120	R12375120	A0185	.FLOOR, END		EA	1
1A	R12375123	R12375123	A0185	..RUBBER FLOORING		EA	1
2	McMaster-Carr 93615A420	McMaster-Carr 93615A420		Cap screw, low head, 1/4"-20tpi, 1"long, 18-8 SS		EA	74
3	R12375105	R12375105	A0185	.HINGE		EA	1
4	R12375201	R12375201	A0185	.FLAP, CENTRAL		EA	1
4A	R12375204	R12375204	A0185	..RUBBER FLOORING		EA	1
4B	R12375311	R12375311	A0185	..SLIDE, CENTRAL		EA	1
4C	R123752001	NO 8-32 UNCx1/4 ANSI B18.3bS	Z9009	..SCREW, HEX SOCKET FLAT - ATT.PT CTSK HD - NO 8-32 UNCx1/4 ANSI B18.3-SSTLAISI304		EA	23
4D	R123752003	243	E0112	..ADHESIVE, THREAD LOCKING - TYPE 243			AR
5	R12375109	R12375109	A0185	.GASKET		EA	1
6	R12375203	R12375203	A0185	.FLAP, SIDE		EA	1
6A	R12375312	R12375312	A0185	..SLIDE, SIDE		EA	1
7	McMaster-Carr 92210A537	McMaster-Carr 92210A537		Flathead screw, 1/4"-20tpi, 1/2"long, 18-8SS			48
8	R12375135	R12375135	A0185	.HINGE		EA	1
9	R12375139	R12375139	A0185	.GASKET		EA	2
10	R12375202	R12375202	A0185	.FLAP, SIDE		EA	1
10A	R12375313	R12375313	A0185	..SLIDE, SIDE		EA	1
11	R12375130	R12375130	A0185	.HINGE		EA	1
12	McMaster-Carr 92146A029	McMaster-Carr 92146A029		Lock washer, 1/4", 18-8 SS			74
13	McMaster-Carr 91831A029	McMaster-Carr 91831A029		Lock nut, 1/4"-20tpi, 18-8 SS			74
14	McMaster-Carr 99637A227	McMaster-Carr 99637A227		Barrel nut, 1/4"-20tpi, 3/8"long, 18-8SS			48
15	McMaster-Carr 98437A112	McMaster-Carr 98437A112		Lock washer, 5/16" dia, SS, STC 515			48
16				Thread locker, Loctite 242 or equivalent			AR

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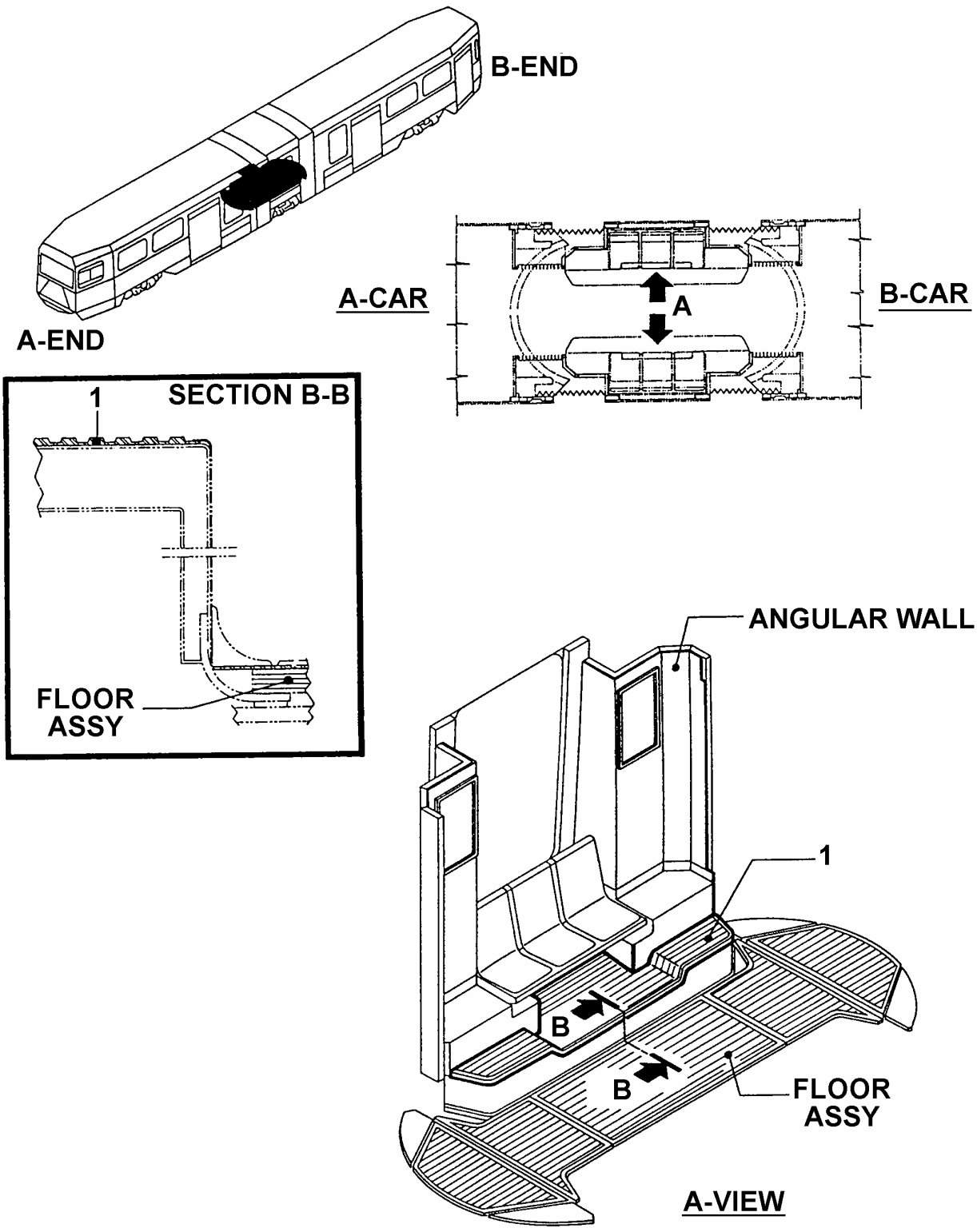

Figure 2-91 Rubber Floor Assy

Rubber Floor Assy (Fig. 2-91)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-091-	R12910250	R12910250	A0185	RUBBER FLOOR ASSY		EA	1
1	R12910289	R12910289	A0185	.FLOOR COVERING		EA	2

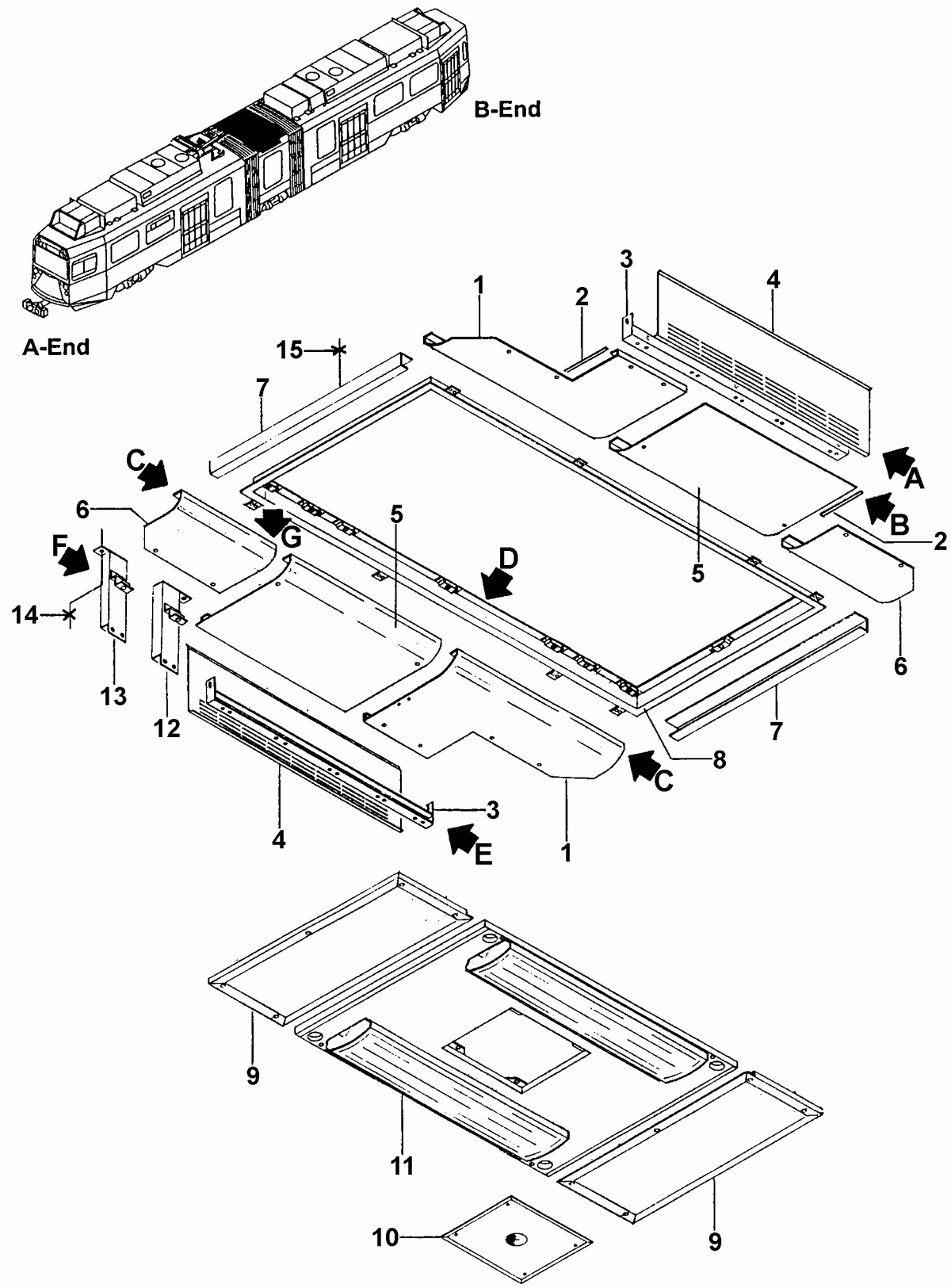

Figure 2-92 Ceiling Panels Installation (Sheet 1 of 2)

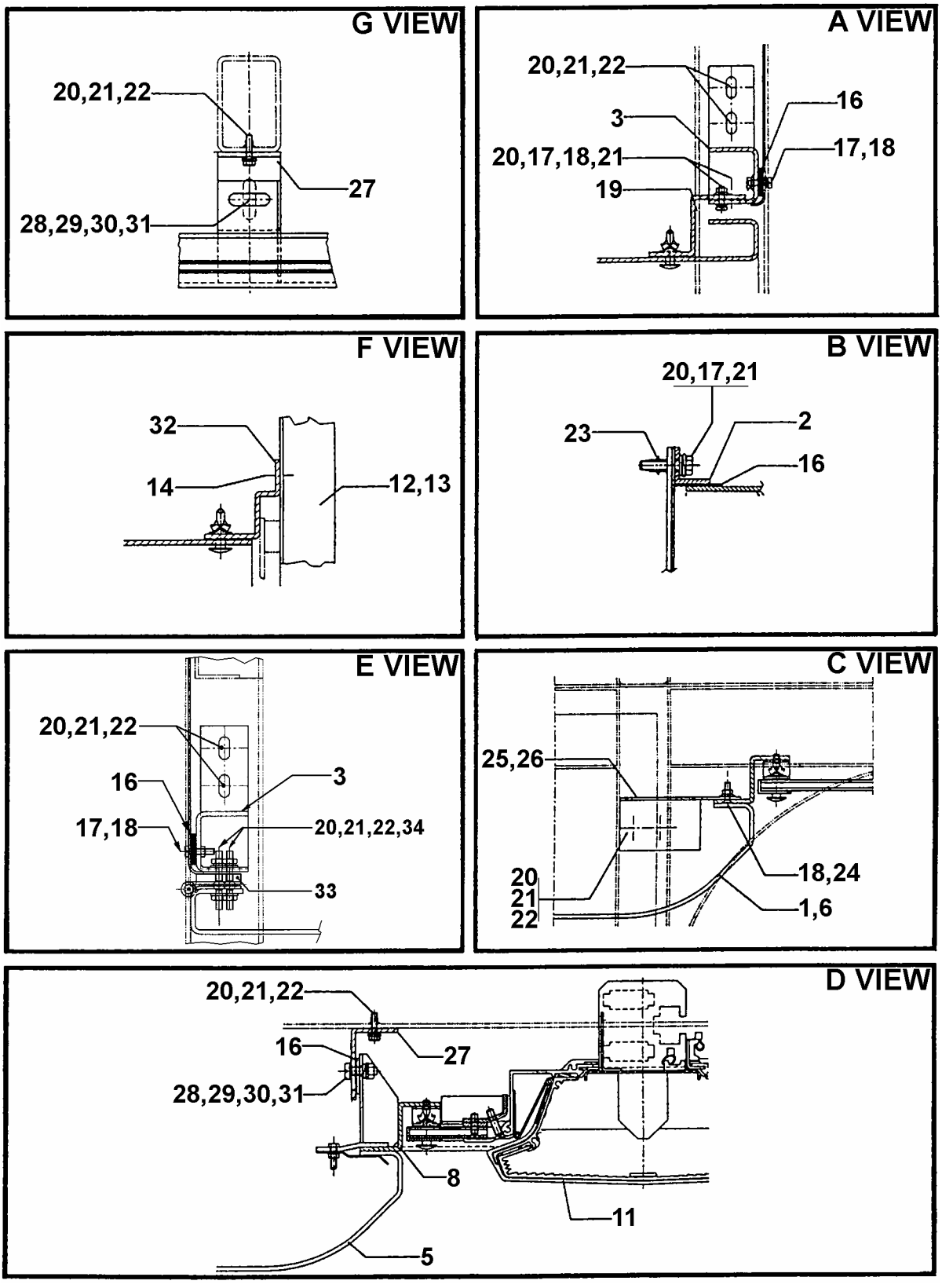

Figure 2-92 Ceiling Panels Installation (Sheet 2 of 2)

Ceiling Panels Installation (Fig. 2-92)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-092-	R12961001	R12961001	A0185	CEILING PANELS INSTALLATION		EA	1
1	R12961082	R12961082	A0185	.CEILING PANEL - SEE FIG. 2-98 FOR DETAIL		EA	2
2	R12961238	R12961238	A0185	.ANGLE		EA	4
3	R12961106	R12961106	A0185	.BRACKET		EA	2
4	R12961102	R12961102	A0185	.SHEET		EA	2
5	R12961083	R12961083	A0185	.CEILING PANEL - SEE FIG. 2-99 FOR DETAIL		EA	2
6	R12961081	R12961081	A0185	.CEILING PANEL - SEE FIG. 2-97 FOR DETAIL		EA	2
7	R12961094	R12961094	A0185	.BRACKET		EA	2
8	R12961234	R12961234	A0185	.CEILING FRAME - SEE FIG. 2-96 FOR DETAIL		EA	1
9	R12961228	R12961228	A0185	.DOOR - SEE FIG. 2-95 FOR DETAIL		EA	2
10	R12961230	R12961230	A0185	.DOOR - SEE FIG. 2-94 FOR DETAIL		EA	1
11	R12961232	R12961232	A0185	.PANEL - SEE FIG. 2-93 FOR DETAIL		EA	1
12	R12961091	R12961091	A0185	.BRACKET		EA	4
13	R12961090	R12961090	A0185	.BRACKET		EA	4
14	R129610011	NO 8-32 UNCx1 ANSI B18.6.4d4N	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1 ANSI B18.6.4-STLZNP		EA	32
15	R1296100115	TAP.D 48 BS	Z9009	.RIVET, BLIND, POP - TAP.D 48 - ATT.PT BS - Al Mg 3.5		EA	6
16	R12961197	R12961197	A0185	.GASKET-0.787x0.118		FT	4.8
17	R1296100110	NO 8-32 UNCx5/8 ANSI B18.6.3cS	Z9009	.SCREW, MACHINE, PAN HD - - ATT.PT NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	26
18	R1296100113	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	34
19	R12961105	R12961105	A0185	.BRACKET		EA	4
20	R1296100114	NO 8 B ANSI B27.2 - S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	74
21	R129610019	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	54
22	R129610013	NO 8-32 UNCx3/4 ANSI B18.6.4eN	Z9009	.SCREW, TAPPING, PAN HD - - ATT.PT NO 8-32 UNCx3/4 ANSI B18.6.4 - STL ZNP		EA	24
23	R1296100111	NO 8 -UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8 -UNC - SSTL		EA	16
24	R1296100116	NO 8x5/8 ANSI B18.6.1aS	Z9009	.SCREW, WOOD, FLAT CTSK - ATT.PT HD - NO 8x5/8 ANSI B18.6.1 - SSTL AISI 304A		EA	4
25	R12961245	R12961245	A0185	.BRACKET		EA	2
26	R12961246	R12961246	A0185	.BRACKET		EA	2
27	R12961093	R12961093	A0185	.BRACKET		EA	4
28	R129610015	1/4-20 UNCx3/4 ANSI B18.2.1cS	Z9009	.SCREW, HEX -1 /4-20 UNCx3/4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	4
29	R129610016	1/4 B ANSI B27.2-S	Z9009	.WASHER, PLAIN TYPE B-1/4 B - ATT.PT ANSI B27.2 - SSTL AISI 304		EA	8
30	R129610017	1/4 ANSI B27.1 -S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	4
31	R129610018	1/4-20 UNC ANSI B18.2.2aS	Z9009	.NUT, HEX -1/4-20 UNC ANSI - ATT.PT B18.2.2- SSTL AISI 304		EA	4
32	R12961006	R12961006	A0185	.BRACKET		EA	8

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Ceiling Panels Installation (Fig. 2-92)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-092- 33	R12961074	R12961074	A0185	.SHIM		EA	2
34	R1296100119	NO 8-32 UNCx7/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx7/8 ANSI B18.6.3 - SSTL AISI 304A		EA	12

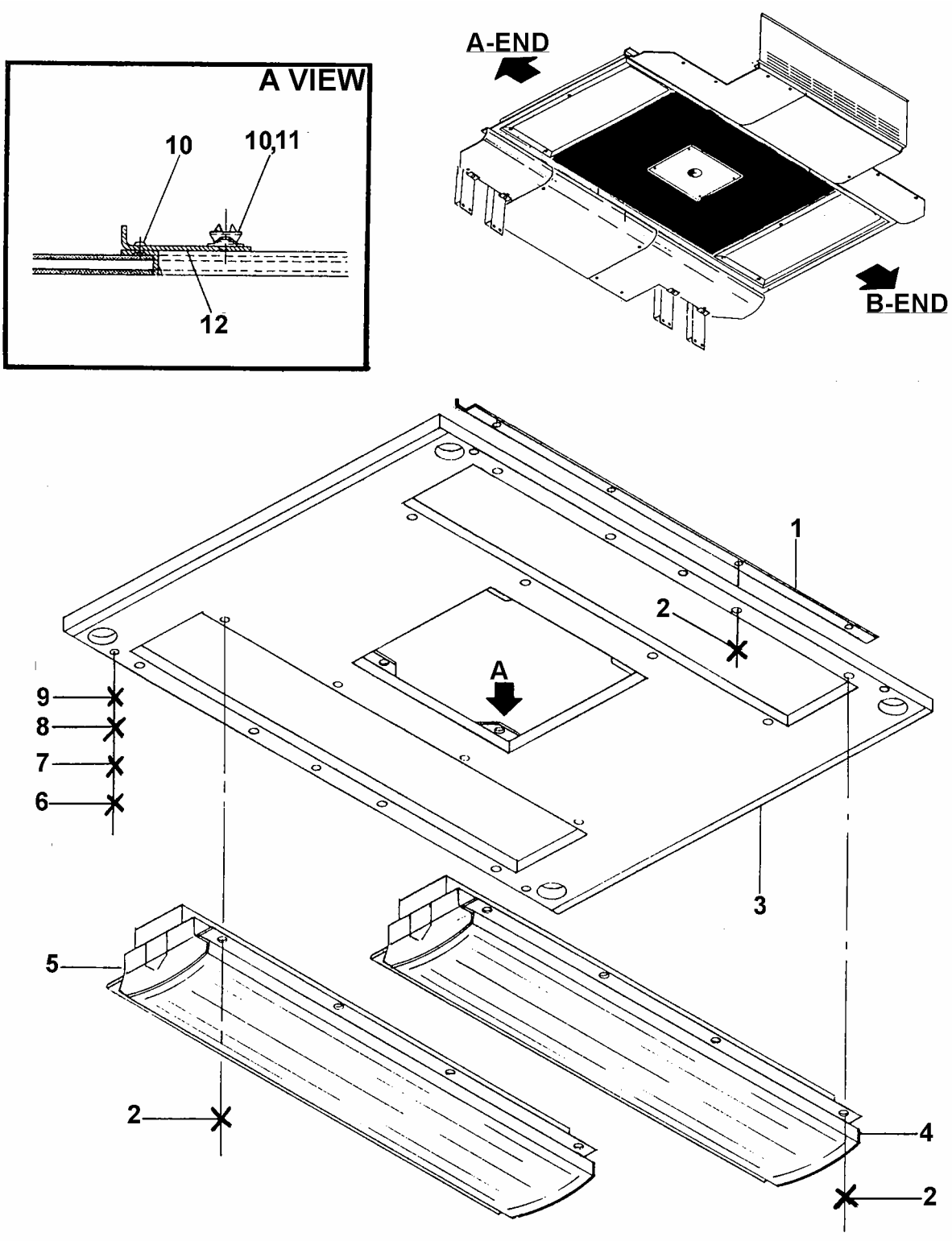

Figure 2-93 Panel

Panel (Fig. 2-93)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-093-	R12961232	R12961232	A0185	PANEL - SEE FIG. 2-92 FOR NHA		EA	1
1	R12961109	R12961109	A0185	.BRACKET		EA	4
2	R129612325	NO 10-24 UNCx1 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 10-24 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	32
3	R12961087	R12961087	A0185	.LAMINATE		EA	1
4	R12495803	109390003	B0006	.AIRFLOW LIGHT FIXTURE, 1-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-18 FOR DETAIL		EA	1
5	R12495802	109390002	B0006	.AIRFLOW AND EMERGENCY LIGHT FIXTURE, 1-LAMP BALLAST - SEE FIG. 6-1 FOR NHA - 6-17 FOR DETAIL		EA	1
6	R129612327	85-78-560-20	B0005	.PIVOT		EA	6
7	R129612328	85-34-301-12	B0005	.RETAINER		EA	6
8	R129612329	85-46-103-39	B0005	.WASHER		EA	6
9	R1296123210	14-18-150-24	B0005	.SPRING		EA	6
10	R129612323	TAP.K 48 BS	Z9009	.RIVET, BLIND, POP - TAP.K 48 - ATT.PT BS		EA	16
11	R129612324	R129612324	A0185	.RECEPTACLE		EA	4
12	R12961152	R12961152	A0185	.SHEET		EA	2

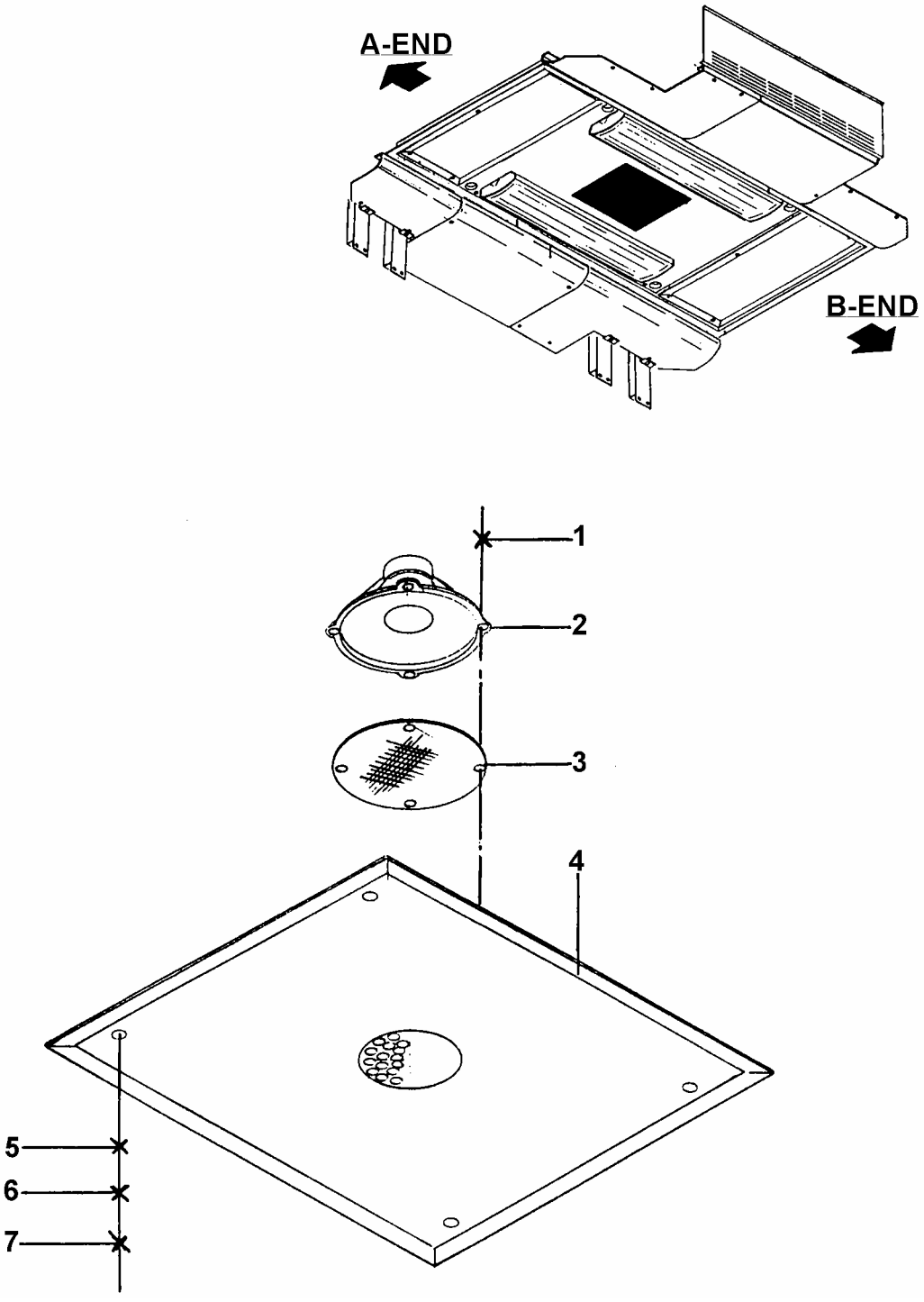

Figure 2-94 Door

Door (Fig. 2-94)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-094-	R12961230	R12961230	A0185	DOOR - SEE FIG. 2-92 FOR NHA		EA	1
1	R129612301	NO 10-24 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 10-24 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	4
2	R12466107	N840-5310-001	B0023	.SPEAKER, INTERNAL (A14) - SEE FIG. 12-1 FOR NHA		EA	1
3	R12961100	R12961100	A0185	.PUNCHED PLATE		EA	1
4	R12961096	R12961096	A0185	.PANEL		EA	1
5	R129612306	85-46-103-39	B0005	.WASHER		EA	4
6	R129612305	85-34-301-12	B0005	.RETAINER		EA	4
7	R129612304	85-78-500-20	B0005	.PIVOT		EA	4

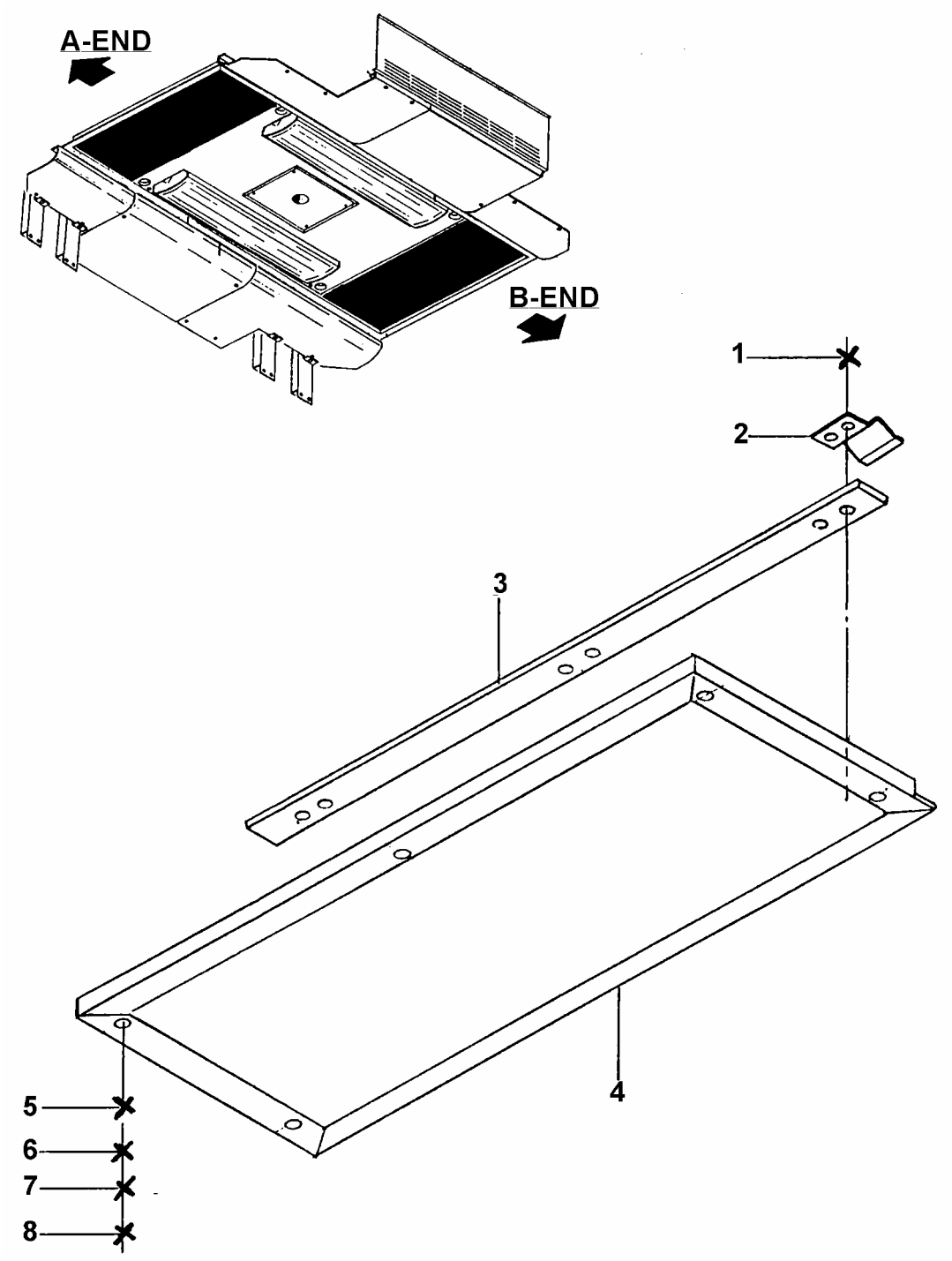

Figure 2-95 Door

Door (Fig. 2-95)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-095-	R12961228	R12961228	A0185	DOOR - SEE FIG. 2-92 FOR NHA		EA	1
1	R129612286	TAP.D 512 BS	Z9009	.RIVET, POP-TAP.D 512 BS-Al - ATT.PT Mg5		EA	6
2	R12961103	R12961103	A0185	.SPRING		EA	3
3	R12961237	R12961237	A0185	.PLATE		EA	1
4	R12961092	R12961092	A0185	.PANEL		EA	1
5	R129612284	14-18-150-24	B0005	.SPRING		EA	5
6	R129612283	85-46-103-39	B0005	.WASHER		EA	5
7	R129612282	85-34-301-12	B0005	.RETAINER		EA	5
8	R129612281	85-78-560-20	B0005	.PIVOT		EA	5

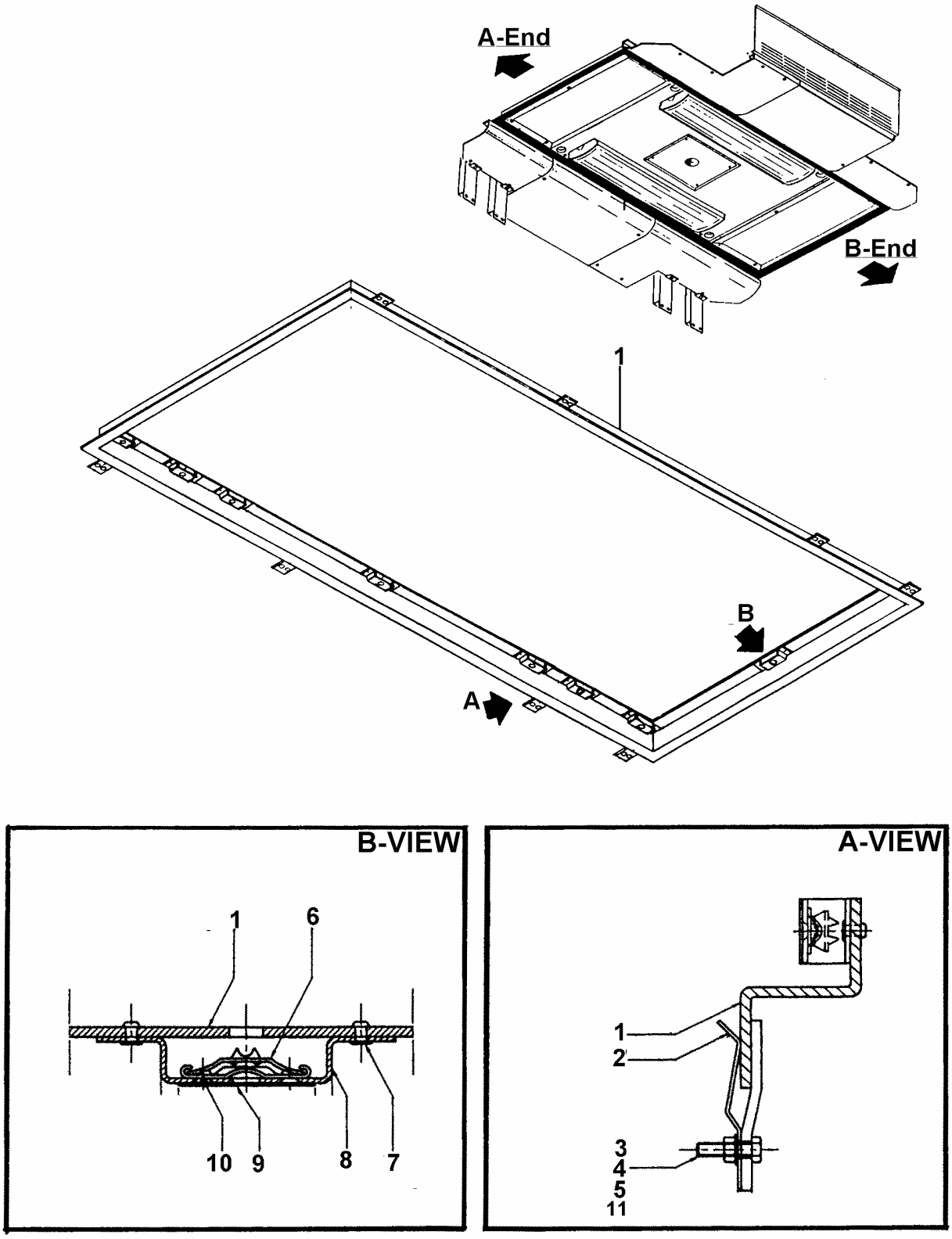

Figure 2-96 Ceiling Frame

Ceiling Frame (Fig. 2-96)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-096-	R12961234	R12961234	A0185	CEILING FRAME - SEE FIG. 2-92 FOR NHA		EA	1
1	R12961097	R12961097	A0185	.FRAME		EA	1
2	R12961103	R12961103	A0185	.SPRING		EA	8
3	R129612343	NO 8-32 UNCx1/2 ANSI B18.6.3c3S	Z9009	.SCREW, MACHINE, PAN HD - ATT.PT TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	16
4	R129612344	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	16
5	R129612346	NO 8 B ANSI B27.2 -S	Z9009	.WASHER, PLAIN TYPE B - NO 8 - ATT.PT B ANSI B27.2 - SSTL AISI 304		EA	16
6	R129612347	85-35-295-20	B0005	.RECEPTACLE		EA	16
7	R129612342	TAP.D 48 BS	Z9009	.RIVET, BLIND, POP - TAP.D 48 - ATT.PT BS - Al Mg 3.5		EA	32
8	R12961235	R12961235	A0185	.SHEET		EA	16
9	R129612348	R129612348	A0185	.GASKET -1.57x0.79x0.04		EA	16
10	R129612341	TAP.K 48 BS	Z9009	.RIVET, BLIND, POP - TAP.K 48 - ATT.PT BS - Al Mg 3.5		EA	32
11	R129612349	NO 8 ANSI B27.1 - S	Z9009	.WASHER, HEL SPRING - NO 8 - ATT.PT ANSI B27.1 - SSTL AISI 302		EA	16

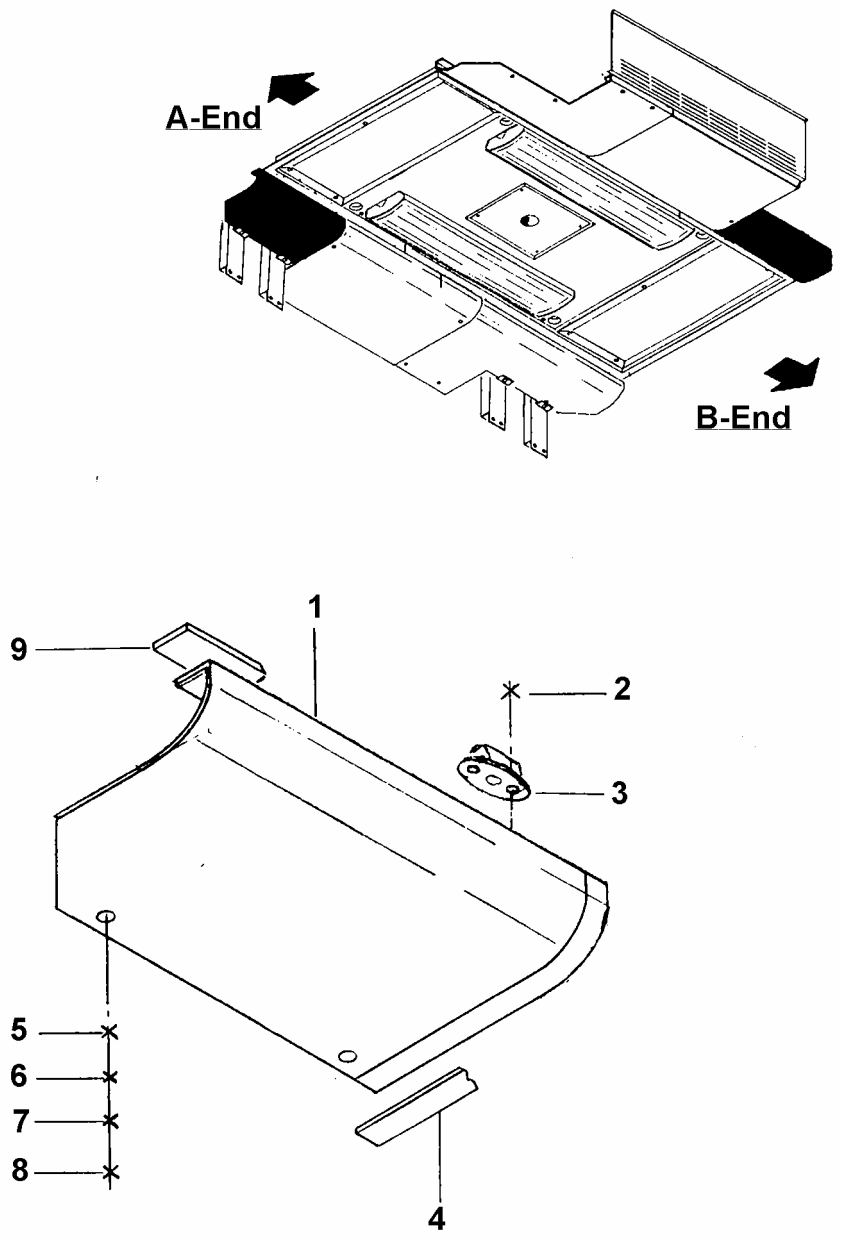

Figure 2-97 Ceiling Panel

Ceiling Panel (Fig. 2-97)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-097-	R12961081	R12961081	A0185	CEILING PANEL - SEE FIG. 2-92 FOR NHA		EA	1
1	R12961075	R12961075	A0185	.SHEET		EA	1
2	R129610816	TAP.K410BS	Z9009	.RIVET, F.C.H. POP -TAP.K410 - ATT.PT BS - Al Mg 3.5		EA	2
3	R129610815	85-35-295-20	B0005	.RECEPTACLE		EA	1
4	R12961182	R12961182	A0185	.GASKET		EA	1
5	R129610812	85-34-301-12	B0005	.RETAINER		EA	2
6	R129610814	85-46-103-39	B0005	.WASHER		EA	2
7	R129610813	14-18-150-24	B0005	.SPRING		EA	2
8	R129610811	85-78-300-20	B0005	.PIVOT		EA	2
9	R12961181	R12961181	A0185	.GASKET		EA	1

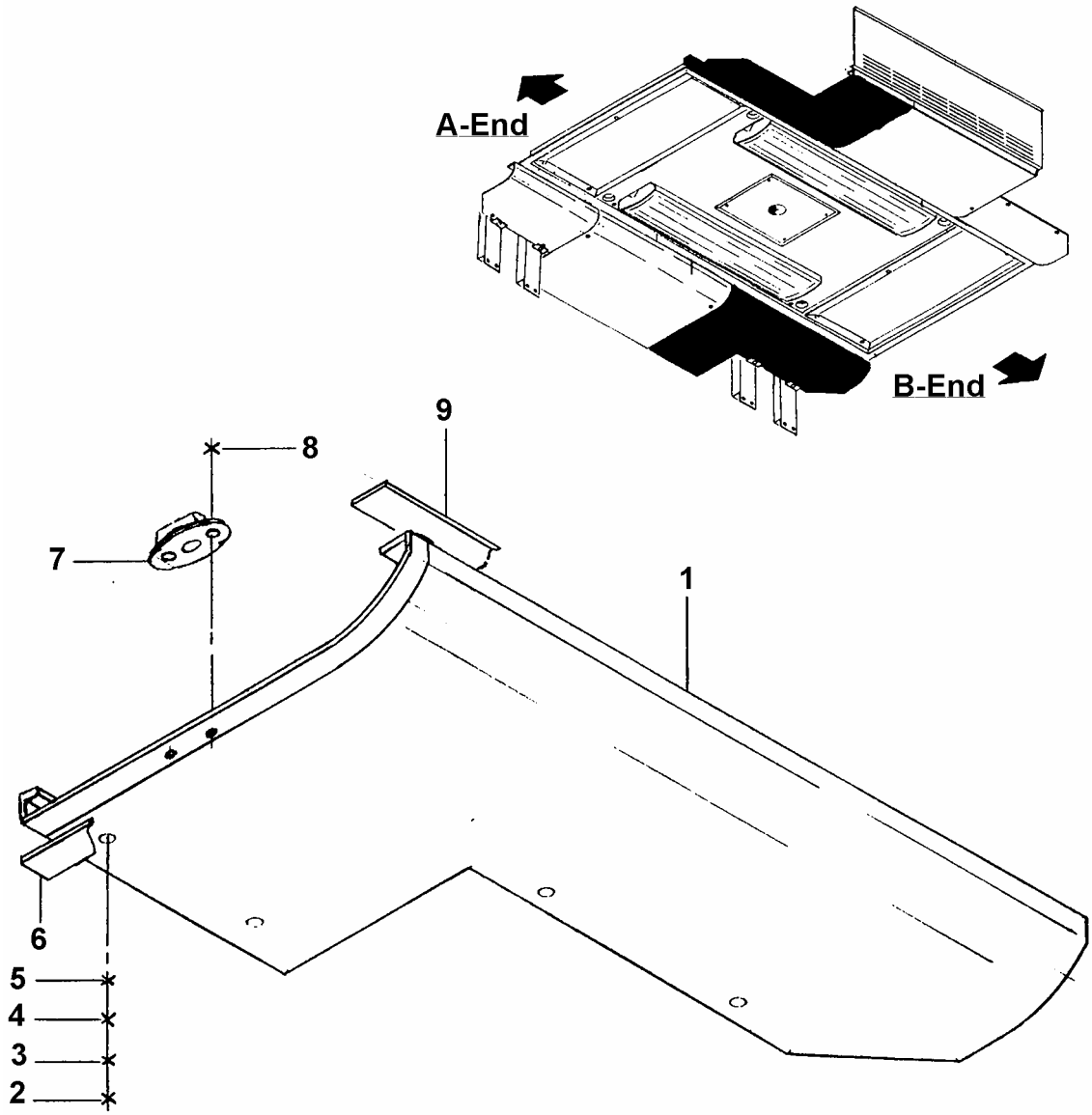

Figure 2-98 Ceiling Panel

Ceiling Panel (Fig. 2-98)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-098-	R12961082	R12961082	A0185	CEILING PANEL - SEE FIG. 2-92 FOR NHA		EA	1
1	R12961078	R12961078	A0185	.SHEET		EA	1
2	R129610821	85-78-300-20	B0005	.PIVOT		EA	4
3	R129610823	14-18-150-24	B0005	.SPRING		EA	4
4	R129610824	85-46-103-39	B0005	.WASHER		EA	4
5	R129610822	85-34-301-12	B0005	.RETAINER		EA	4
6	R12961179	R12961179	A0185	.GASKET		FT	1.99
7	R129610825	85-35-295-20	B0005	.RECEPTACLE		EA	1
8	R129610826	TAP.K410BS	Z9009	.RIVET, F.C.H. POP -TAP.K410 - ATT.PT BS - Al Mg 3.5		EA	2
9	R12961178	R12961178	A0185	.GASKET		FT	3.31

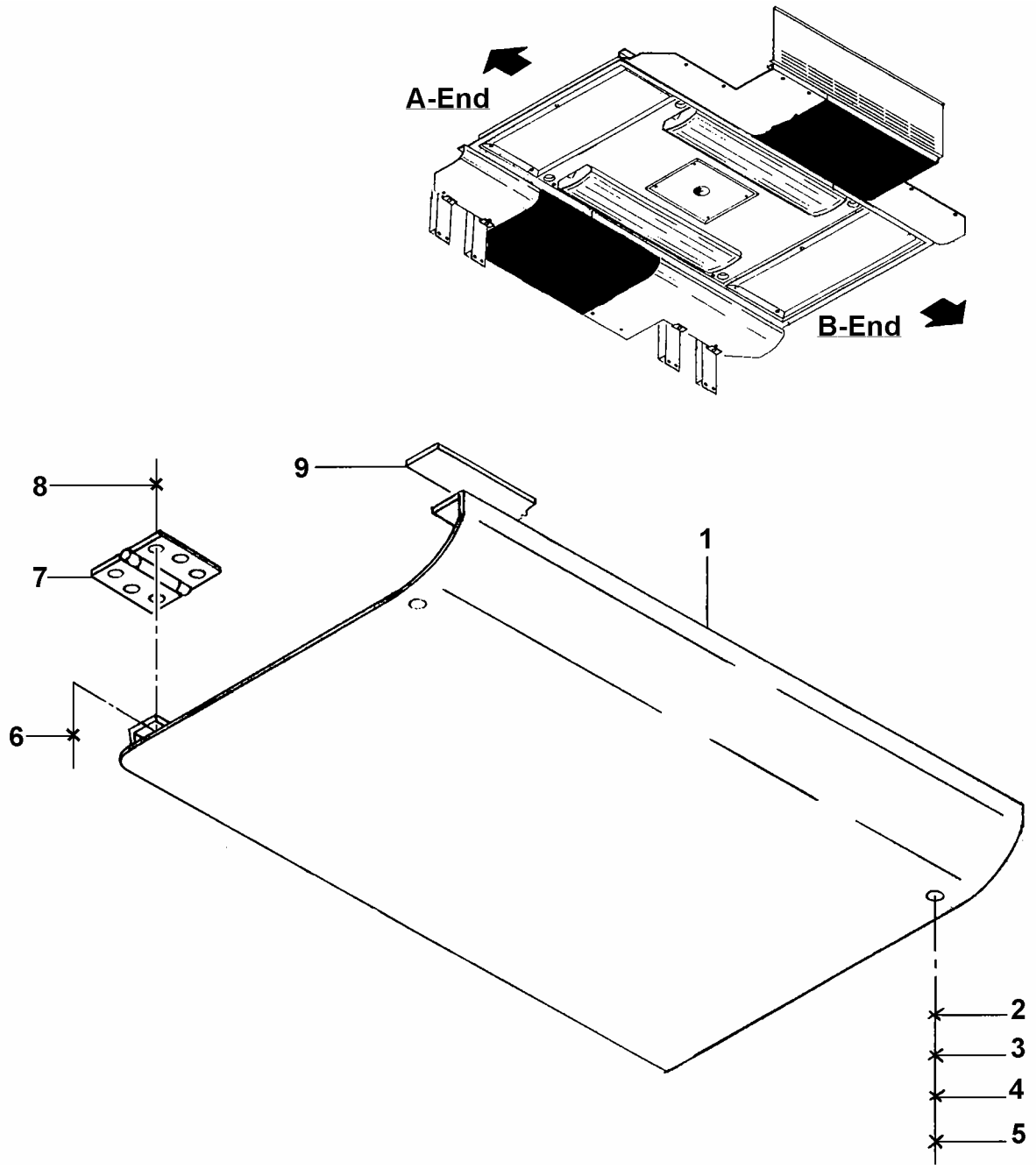

Figure 2-99 Ceiling Panel

Ceiling Panel (Fig. 2-99)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-099-	R12961083	R12961083	A0185	CEILING PANEL - SEE FIG. 2-92 FOR NHA		EA	1
1	R12961080	R12961080	A0185	.SHEET		EA	1
2	R129610835	85-46-103-39	E0005	.WASHER		EA	2
3	R129610834	85-34-301-12	E0005	.RETAINER		EA	2
4	R129610836	14-18-150-24	B0005	.SPRING		EA	2
5	R129610833	85-78-340-20	E0005	.PIVOT		EA	2
6	R129610832	NO 8-32 UNC ANSI B18.2.2bS	Z9009	.NUT, HEX FLANGE - NO 8-32 - ATT.PT UNC ANSI B18.2.2 - SSTL AISI 304A		EA	6
7	R12965092	R12965092	A0185	.HINGE, LEFT		EA	2
8	R129610831	NO 8-32 UNCx1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx1/2 ANSI B18.6.3 - SSTL AISI 304A		EA	6
9	R12961186	R12961186	A0185	.GASKET		FT	2.82

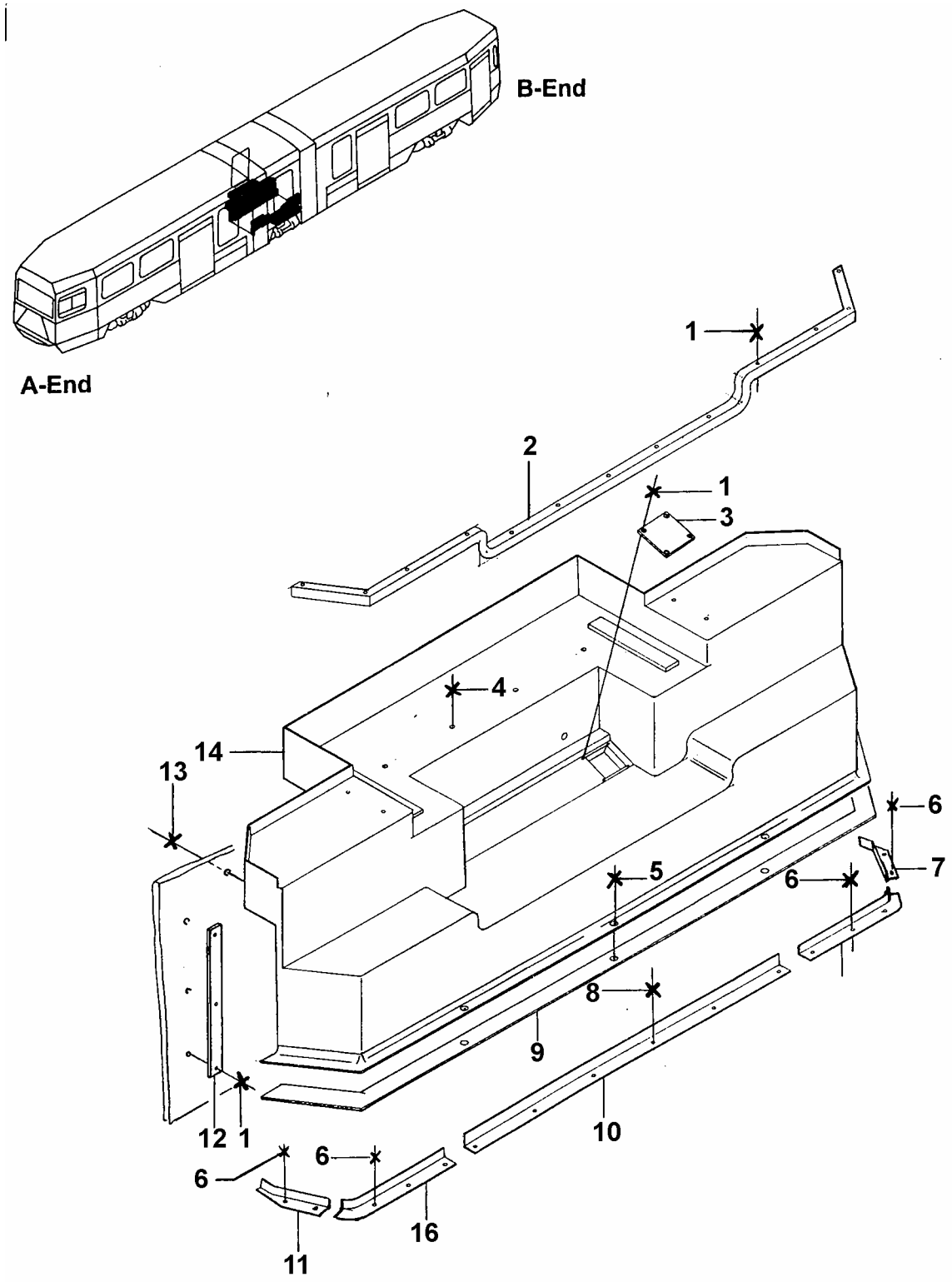

Figure 2-100 Box In Articulation Area Instl

Box In Articulation Area Instl (Fig. 2-100)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-100-	R12375550	R12375550	A0185	BOX IN ARTICULATION AREA INSTL		EA	1
1	R123755546	NO 8-32 UNCx3/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	24
2	R12375559	R12375559	A0185	.FRAME		EA	2
3	R12375561	R12375561	A0185	.COVER		EA	4
4	R123755543	5/16-18 UNCx4 ANSI B18.2.1cS	Z9009	.SCREW, HEX - 5/16-18 UNCx4 - ATT.PT ANSI B18.2.1 - SSTL AISI 304A		EA	8
5	R123755541	5/16-18 UNCx1-1/8 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC - 5/16-18 UNCx1-1/8 ANSI B18.6.3 - SSTL AISI 30		EA	6
6	R123755542	1/4-20 UNCx1-1/2 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC -1/4-20 UNCx1-1/2 ANSI B18.6.3 - SSTL AISI 304		EA	20
7	R12375567	R12375567	A0185	.FRAME		EA	2
8	R123755545	1/4-20 UNCx3/4 ANSI B18.6.4d2S	Z9009	.SCREW, TAPPING TYPE AB, - ATT.PT FLAT CTSK HD TYPE I REC - 1/4-20 UNCx3/4 ANSI B18.6.4 - SSTL AISI 304		EA	12
9	R1237555410	1.57x0.12	Z9009	.GASKET-1.57x0.12		FT	6.5
10	R12375566	R12375566	A0185	.FRAME		EA	2
11	R12375565	R12375565	A0185	.FRAME		EA	2
12	R12375555	R12375555	A0185	.PROFILE		EA	4
13	R123755544	1/4-20 UNCx3/4 ANSI B18.6.3aS	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD TYPE IA REC -1/4-20 UNCx3/4 ANSI B18.6.3- SSTL AISI 304A		EA	12
14	R12375557	R12375557	A0185	.BOX		EA	2
15	R12375580	R12375580	A0185	.FRAME		EA	2
16	R12375579	R12375579	A0185	.FRAME		EA	2

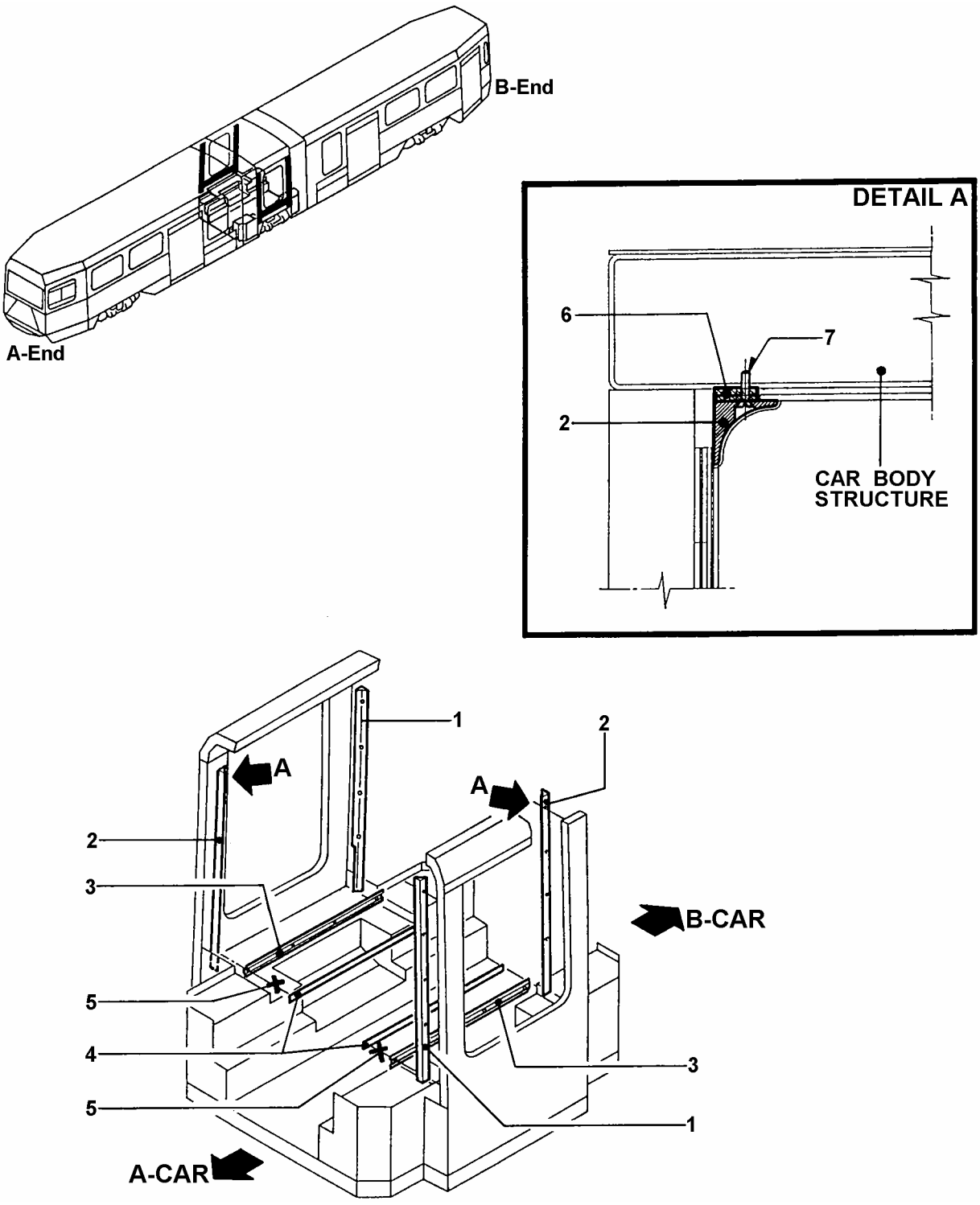

Figure 2-101 Inner Body Side Lining

Inner Body Side Lining (Fig. 2-101)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-101-	R12920501	R12920501	A0185	INNER BODY SIDE LINING		EA	1
1	R12920573	R12920573	A0185	.PROFILE, VERTICAL		EA	2
2	R12920574	R12920574	A0185	.PROFILE, VERTICAL		EA	2
3	R12920537	R12920537	A0185	.PROFILE, HORIZONTAL		EA	2
4	R12920586	R12920586	A0185	.SCREW COVER, LG=4.38 FT		EA	2
5	R129205751	NO 8-32 UNCx3/4 ANSI B18.6.4d4	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD TYPE IA REC - NO 8-32 UNCx3/4 ANSI B18.6.4		EA	8
6	R12920591	R12920591	A0185	.GASKET-0.787x0.118			AR
7	R129205752	NO 8-32 UNCx5/8 ANSI B18.6.3a1	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3		EA	16

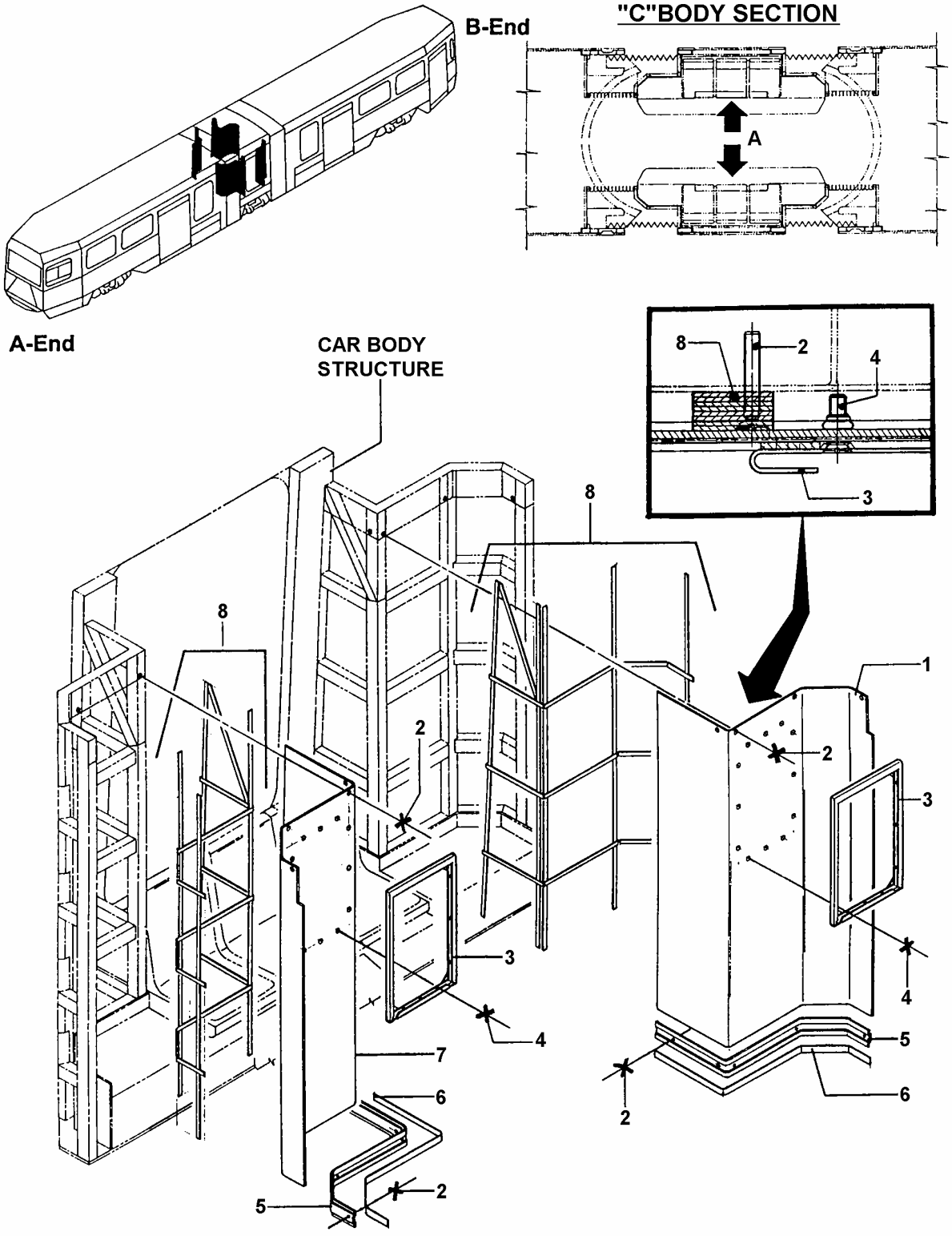

Figure 2-102 Angular Walls, Car C

Angular Walls, Car C (Fig. 2-102)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-102-	R12920702	R12920702	A0185	ANGULAR WALLS, CAR C		EA	1
1	R12920761	R12920761	A0185	.ANGULAR WALL		EA	2
2	R129207021	NO 8-32 UNCx1 ANSI B18.6.4dN	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1 ANSI B18.6.4 - STL ZNP		EA	36
3	R12920771	R12920771	A0185	.ADVERTISING CARD HOLDER		EA	4
4	R129207022	NO 8-32 UNCx5/8 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx5/8 ANSI B18.6.3 - SSTL AISI 304A		EA	48
5	R12920762	R12920762	A0185	.FRAME		EA	4
6	R12920930	R12920930	A0185	.GASKET - L=43.31			AR
7	R12920760	R12920760	A0185	.ANGULAR WALL		EA	2
8	R12920926	R12920926	A0185	.GASKET-0.79x0.12			AR

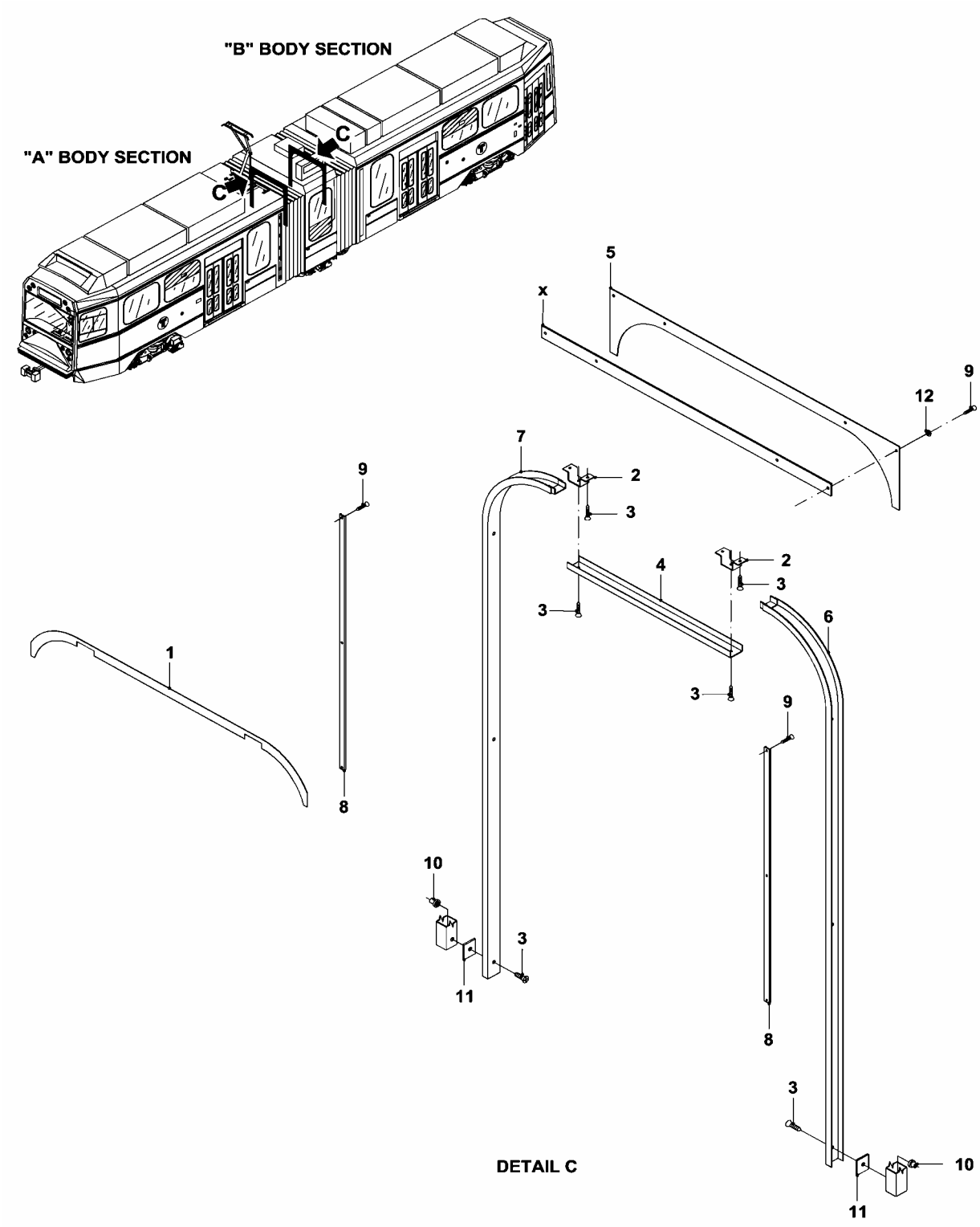

Figure 2-103 Car C Layout

Car C Layout (Fig. 2-103)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-103-	R12920700	R12920700	A0185	CAR C LAYOUT		EA	1
1	R12920825	R12920825	A0185	.SHEET		EA	2
2	R12920823	R12920823	A0185	.BRACKET		EA	4
3	R129208377	NO 8-32 UNCx3/4 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx3/4 ANSI B18.6.3 - SSTL AISI 304A		EA	12
4	R12920710	R12920710	A0185	.FRAME, UPPER		EA	2
5	R12920707	R12920707	A0185	.PANEL, UPPER		EA	2
5A	R12920842	R12920842	A0185	..GASKET		EA	1
5B	R12920841	R12920841	A0185	..LAMINATE		EA	1
6	R12920709	R12920709	A0185	.FRAME, RIGHT		EA	2
7	R12920708	R12920708	A0185	.FRAME, LEFT		EA	2
8	R12920711	R12920711	A0185	.GUIDE, TAPE SWITCH		EA	4
9	R129208371	NO 8-32 UNCx1 ANSI B18.6.4dN	Z9009	.SCREW, TAPPING, FLAT CTSK - ATT.PT HD - NO 8-32 UNCx1 ANSI B18.6.4 - STL ZNP		EA	20
10	R129208376	NO 8 -UNC	Z9009	.RIVET NUT, HEX, FASTENER - - ATT.PT NO 8 -UNC- SSTL		EA	10
11	R12920792	R12920792	A0185	.GASKET		EA	12
12	R129208378	5 mm UNI 6594	Z9009	.WASHER-5 mm UNI 6594- - ATT.PT CHR. BRASS		EA	8

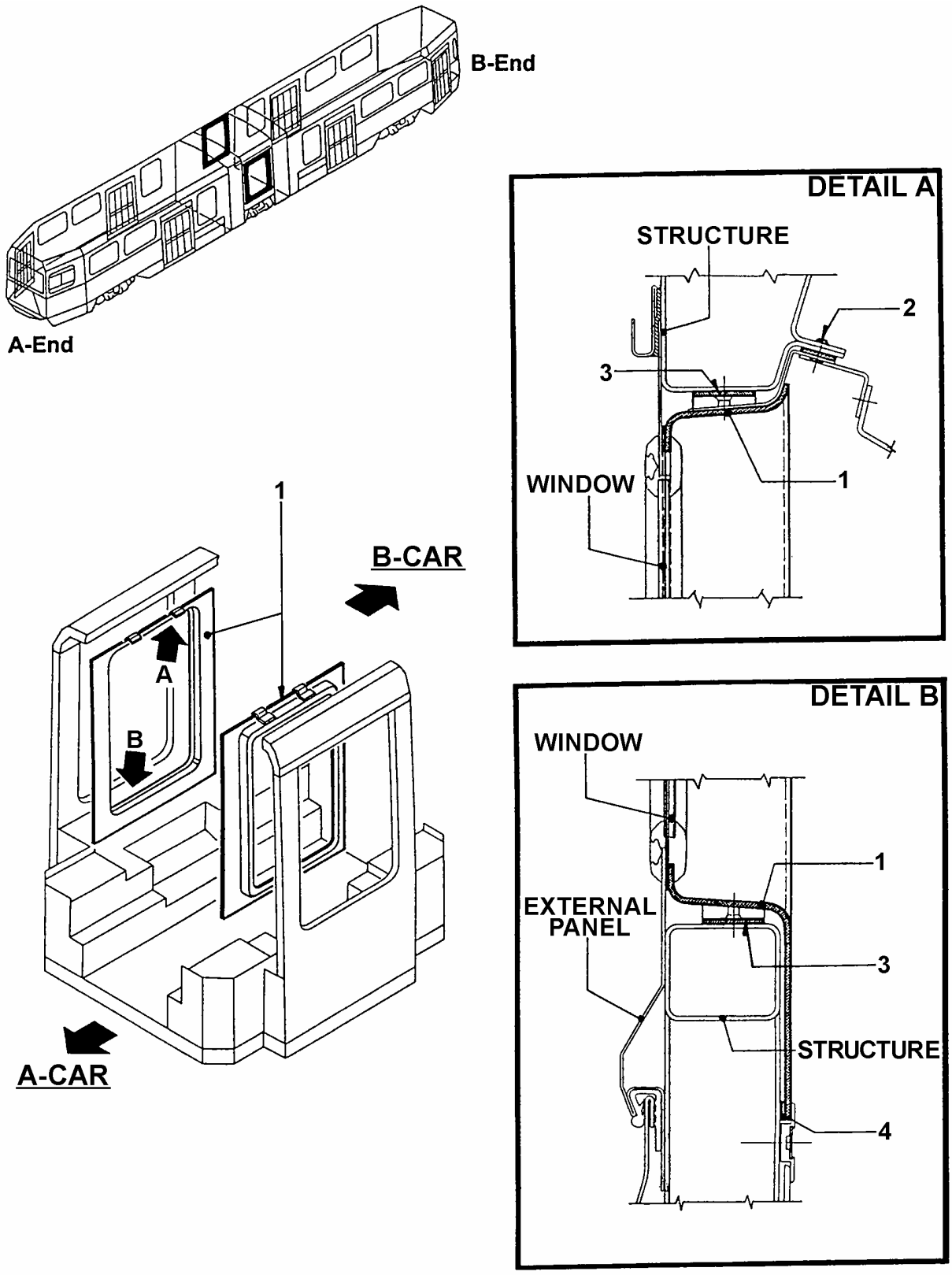

Figure 2-104 Inner Window Frames Installation

Inner Window Frames Installation (Fig. 2-104)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-104-	R12920603	R12920603	A0185	INNER WINDOW FRAMES INSTALLATION		EA	1
1	R12920617	R12920617	A0185	.WINDOW FRAME		EA	2
2	R129206031	TAP.K 44 BS	Z9009	.RIVET, BLIND, POP - TAP.K 44 - ATT.PT BS		EA	2
3	R12920651	R12920651	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE -1.57x0.12 - HARD 70 SHORE			AR
4	R12920652	R12920652	A0185	.GASKET, NEOPRENE, SELF-STICKING ON ONE SIDE - 0.59x0.08 - HARD 70 SHORE			AR

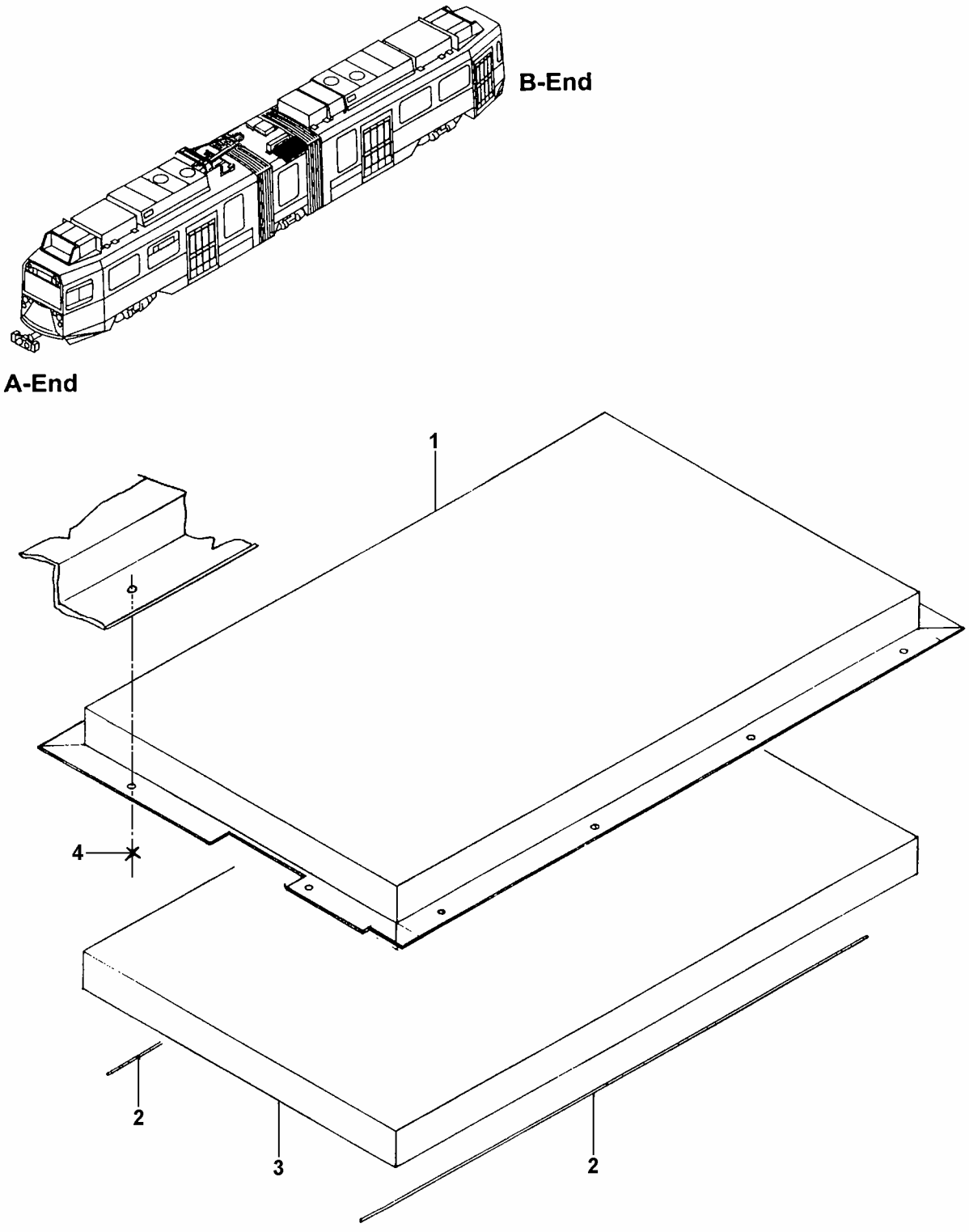

Figure 2-105 Ceiling Cover Installation, Car C

Ceiling Cover Installation, Car C (Fig. 2-105)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-105-	R12498825	R12498825	A0185	CEILING COVER INSTALLATION, CAR C		EA	1
1	R12498870	R12498870	A0185	.COVER		EA	1
2	R12498827	R12498827	A0185	.SPRING		EA	2
3	R12498826	R12498826	A0185	THERMAL INSULATION - THK 2-1/2, DENSITY 0.75 lbs/cu.ft - ULTRALITE		EA	1
4	R124988251	TAP.D 54 BS - 0.16x0.40	08633	.RIVET, POP - TAP.D 54 BS - - ATT.PT 0.16x0.40 -SAE 1005		EA	12

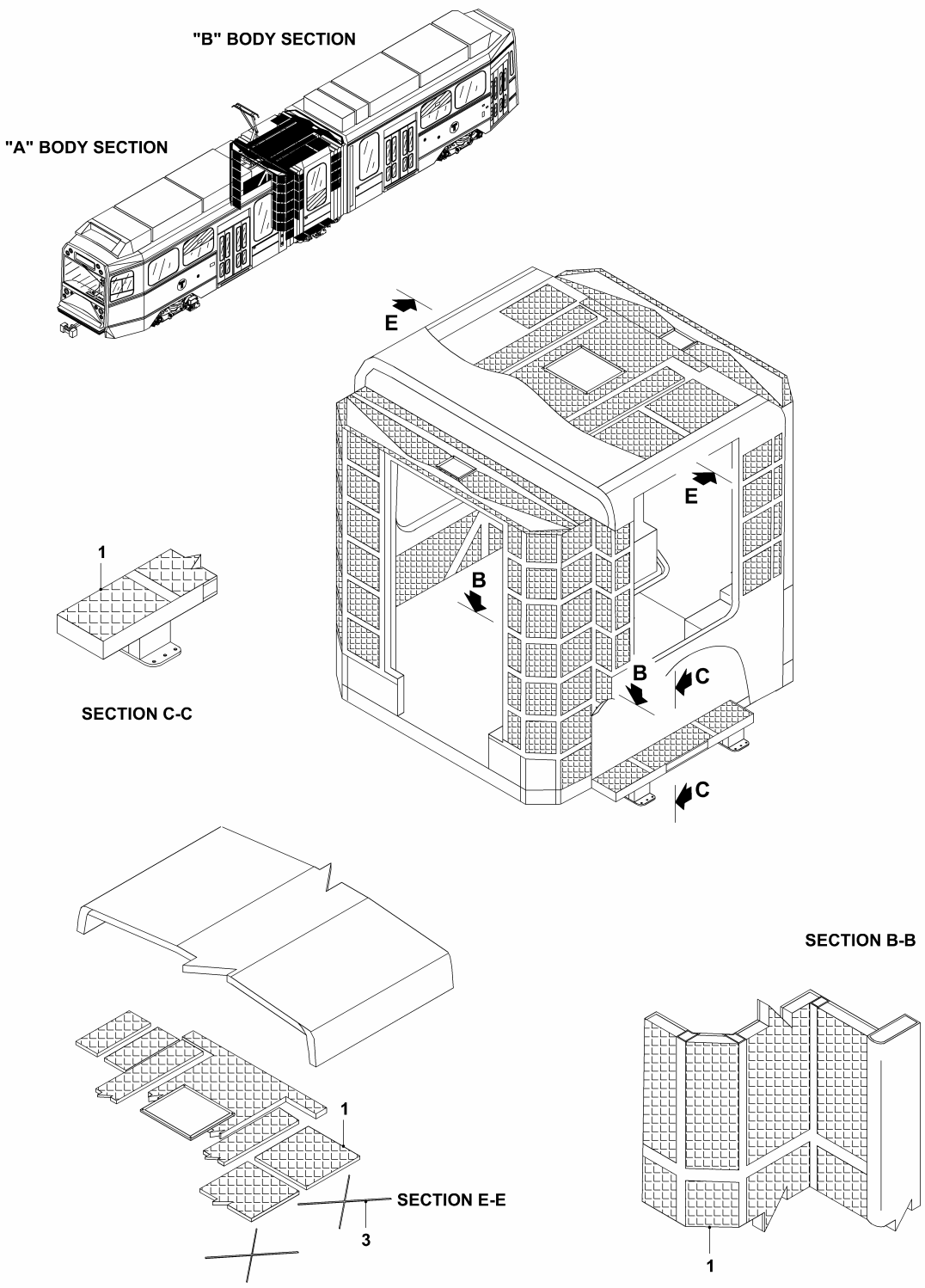

Figure 2-106 Thermal/Acoustical Insulation

Thermal/Acoustical Insulation (Fig. 2-106)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-106-	R12000700	R12000700	A0185	THERMAL/ACOUSTICAL INSULATION		EA	1
1	R12000716	R12000716	A0185	THERMAL INSULATION - THK 1-1/2, DENSITY 1 lbs/cu.ft - ULTRALITE			AR
2				DELETED			
3	R12000718	0.05 DIA UNI 3823	Z9009	.SPRING - 0.05 DIA UNI 3823			AR

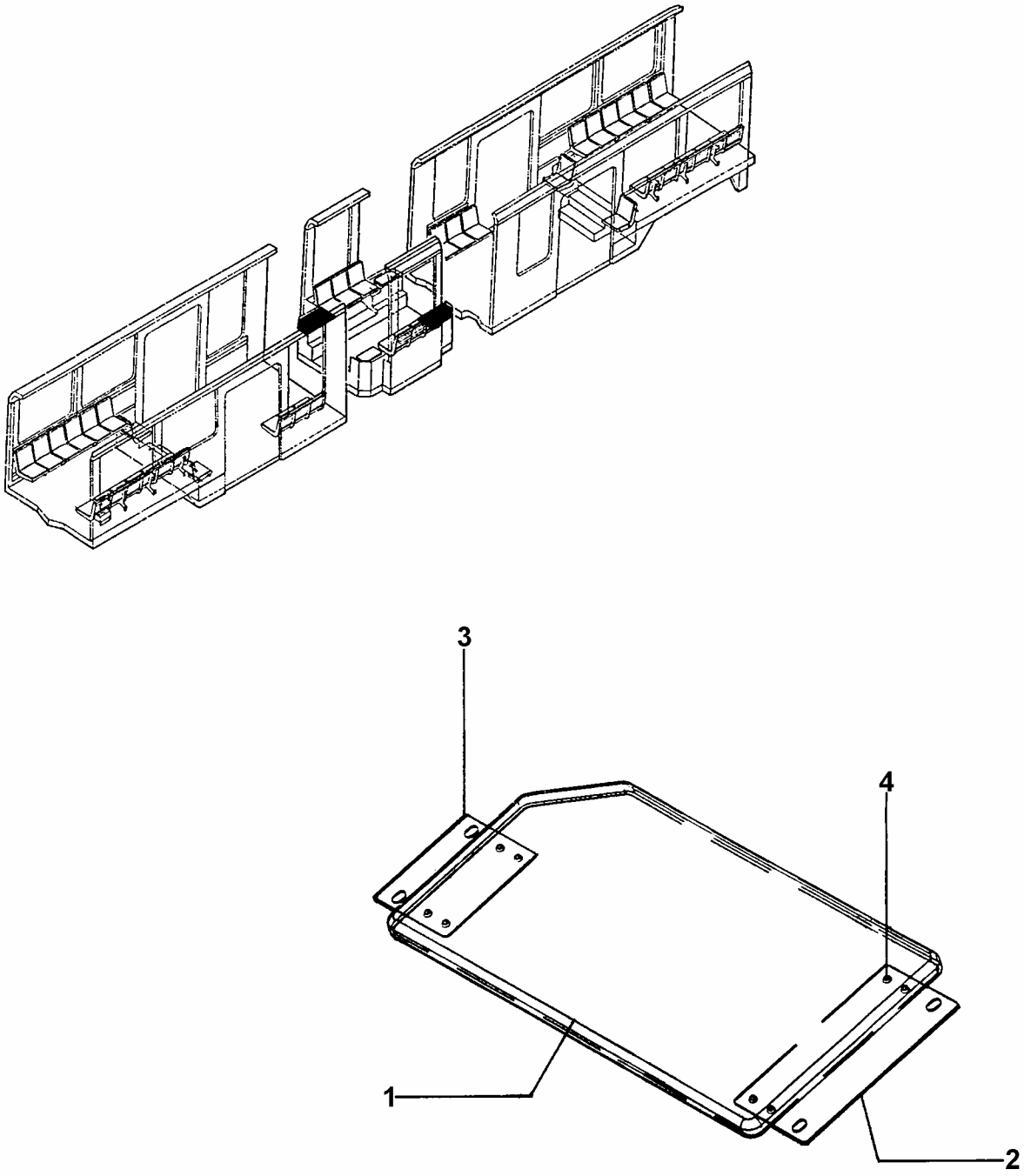

Figure 2-107 Seat, Box Passenger Pad, RH

Seat, Box Passenger Pad, RH (Fig. 2-107)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-107-	R12950600	3444019	B0024	SEAT, BOX PASSENGER PAD, RH - SEE FIG. 2-78 FOR NHA		EA	1
1	3443981	3443981	B0024	.BOX PAD CUSHION RH		EA	1
2	3444096	3444096	B0024	.BRACKET, BOX PAD, LARGE		EA	1
3	3444097	3444097	B0024	.BRACKET, SMALL, BOX PAD		EA	1
4	8009525	8009525	B0024	.SCREW, PFHMS - NO 6-32 X 0.375 - SSTL		EA	8

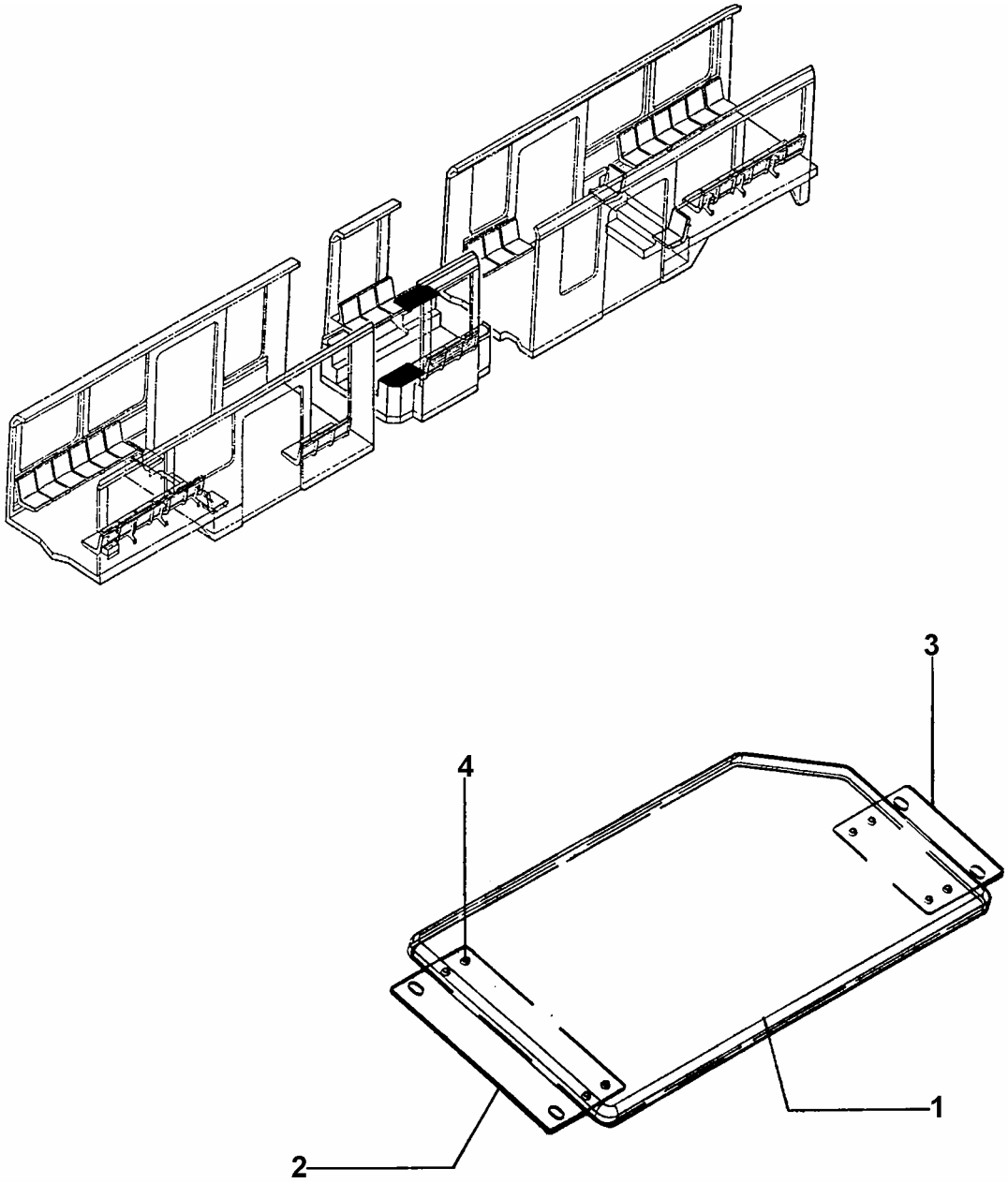

Figure 2-108 Seat, Box Passenger Pad, LH

Seat, Box Passenger Pad, LH (Fig. 2-108)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-108-	R12950601	3444018	B0024	SEAT, BOX PASSENGER PAD, LH - FIG. 2-78 FOR NHA		EA	1
1	3443982	3443982	B0024	.BOX PAD CUSHION LH		EA	1
2	3444096	3444096	B0024	.BRACKET, BOX PAD, LARGE		EA	1
3	3444097	3444097	B0024	.BRACKET, SMALL, BOX PAD		EA	1
4	8009525	8009525	B0024	.SCREW, PFHMS - NO 6-32 X 0.375 - SSTL		EA	8

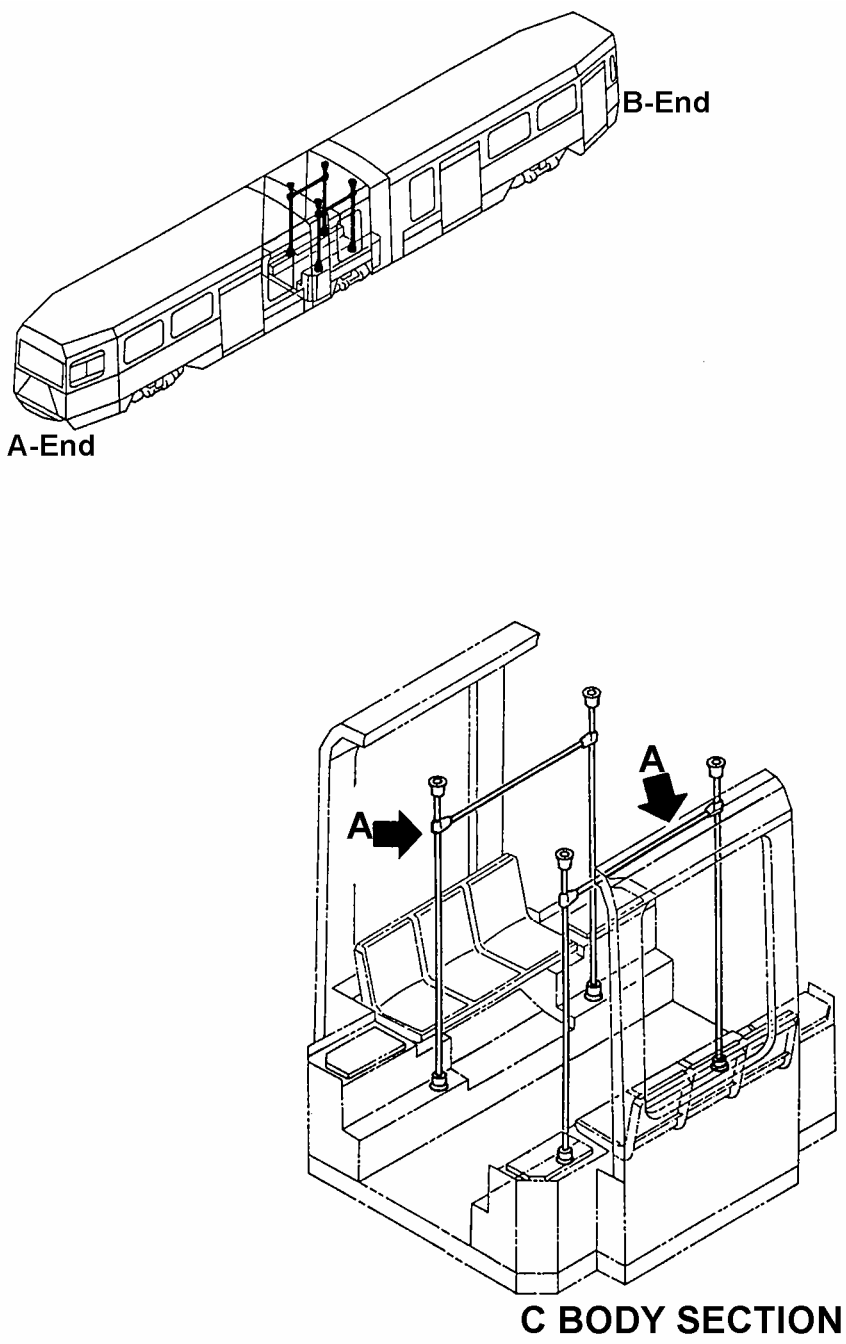

Figure 2-109 Stanchions And Handrails Installation (Sheet 1 of 2)

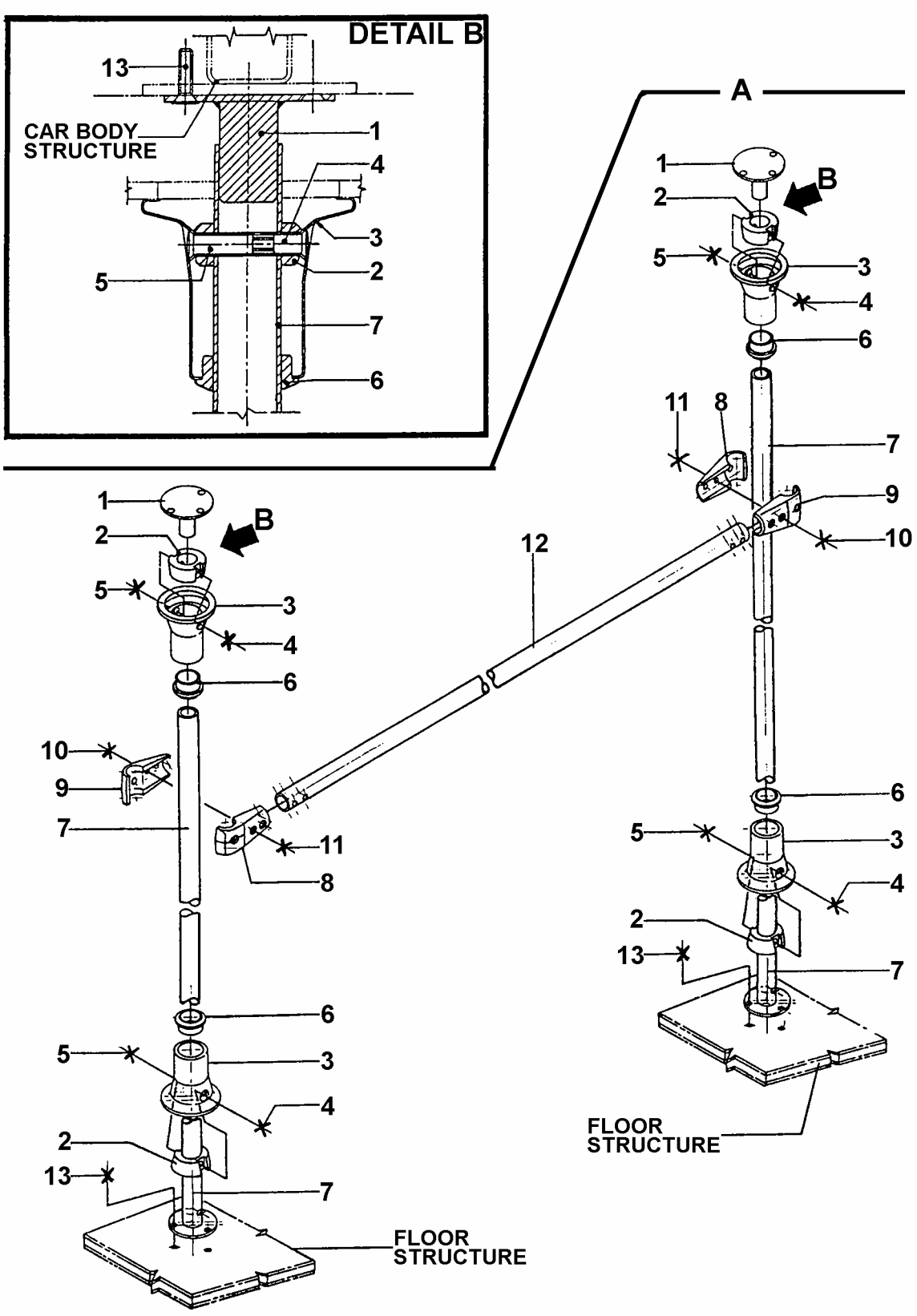

Figure 2-109 Stanchions And Handrails Installation (Sheet 2 of 2)

Stanchions And Handrails Installation (Fig. 2-109)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-109-	R12990101	R12990101	A0185	STANCHIONS AND HANDRAILS INSTALLATION		EA	1
1	R12990236	R12990236	A0185	.SUPPORT		EA	4
2	R12990222	R12990222	A0185	.SPACER		EA	8
3	R12990221	R12990221	A0185	.COVER		EA	8
4	R12990225	R12990225	A0185	.SCREW, SPECIAL - ATT.PT		EA	8
5	R12990224	R12990224	A0185	.SCREW, SPECIAL - ATT.PT		EA	8
6	R12990220	R12990220	A0185	.BUSHING		EA	8
7	R12990216	R12990216	A0185	.STANCHION		EA	4
8	R12990229	R12990229	A0185	JUNCTION		EA	4
9	R12990228	R12990228	A0185	JUNCTION		EA	4
10	R12990233	R12990233	A0185	.SCREW, SPECIAL - ATT.PT		EA	8
11	R129901019	1/4-20 UNCx1-1/4 ANSI B18.3cS	Z9009	.SCREW, HEX SOCKET HD CAP - ATT.PT -1/4-20 UNCx1-1/4 ANSI B18.3 - SSTL AISI 304		EA	8
12	R12990210	R12990210	A0185	.STANCHION		EA	2
13	R129901016	1/4-20 UNCx1 ANSI B18.6.3a1S	Z9009	.SCREW, MACHINE, FLAT CTSK - ATT.PT HD -1/4-20 UNCx1 ANSI B18.6.3 - SSTL AISI 304A		EA	24

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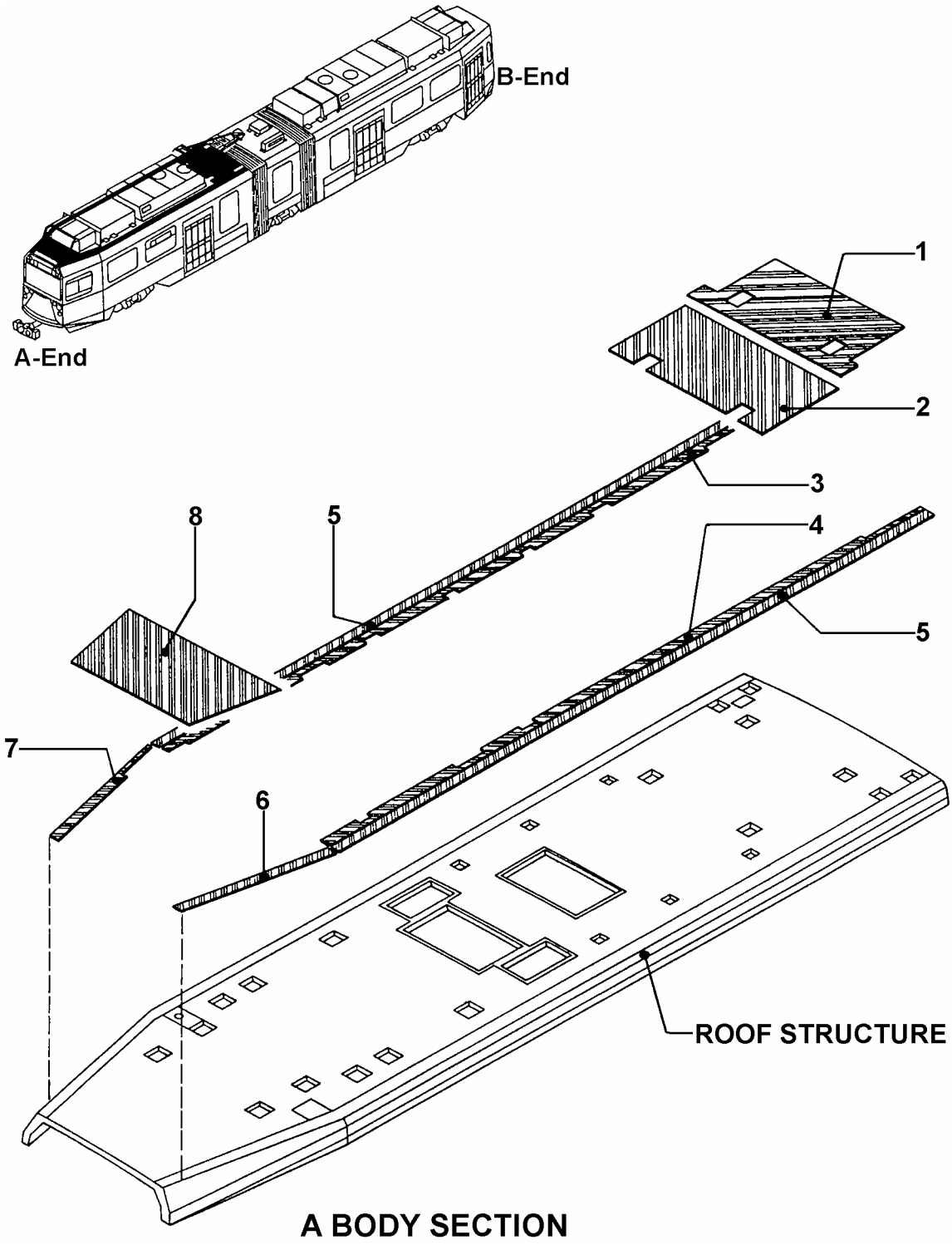

Figure 2-110 Anti-Slip Surfaces Installation (Sheet 1 of 2)

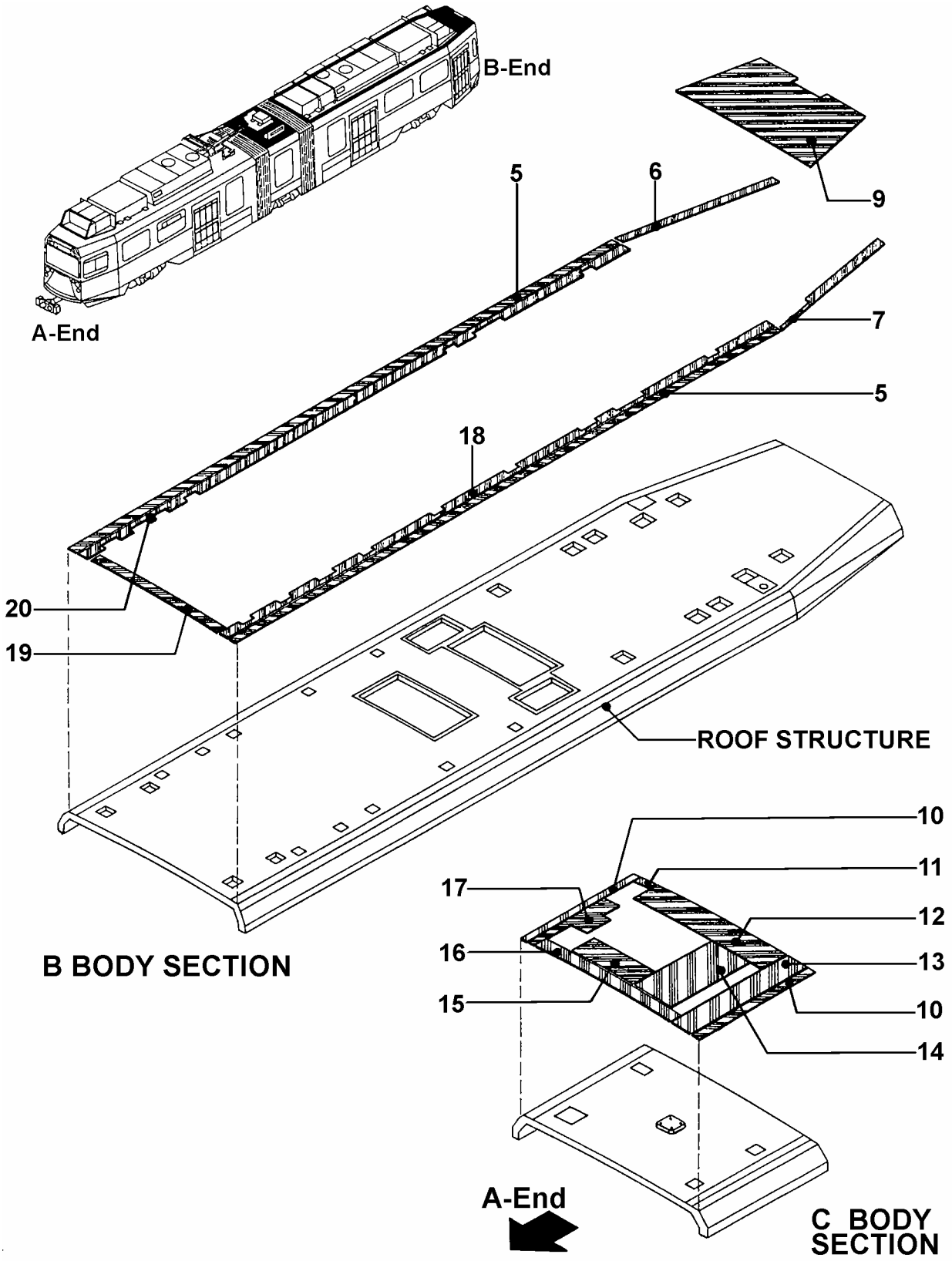

Figure 2-110 Anti-Slip Surfaces Installation (Sheet 2 of 2)

Anti-Slip Surfaces Installation (Fig. 2-110)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-110-	R13390500	R13390500	A0185	ANTI-SLIP SURFACES INSTALLATION		EA	1
1	R13390509	R13390509	A0185	.SAFETY WALK		EA	1
2	R13390508	R13390508	A0185	.SAFETY WALK		EA	1
3	R13390507	R13390507	A0185	.SAFETY WALK		EA	1
4	R13390506	R13390506	A0185	.SAFETY WALK		EA	1
5	R13390505	R13390505	A0185	.SAFETY WALK		EA	4
6	R13390503	R13390503	A0185	.SAFETY WALK		EA	2
7	R13390504	R13390504	A0185	.SAFETY WALK		EA	2
8	R13390501	R13390501	A0185	.SAFETY WALK		EA	1
9	R13390502	R13390502	A0185	.SAFETY WALK		EA	1
10	R13390513	R13390513	A0185	.SAFETY WALK		EA	2
11	R13390517	R13390517	A0185	.SAFETY WALK		EA	1
12	R13390518	R13390518	A0185	.SAFETY WALK		EA	1
13	R13390520	R13390520	A0185	.SAFETY WALK		EA	1
14	R13390519	R13390519	A0185	.SAFETY WALK		EA	1
15	R13390515	R13390515	A0185	.SAFETY WALK		EA	1
16	R13390514	R13390514	A0185	.SAFETY WALK		EA	1
17	R13390516	R13390516	A0185	.SAFETY WALK		EA	1
18	R13390510	R13390510	A0185	.SAFETY WALK		EA	1
19	R13390512	R13390512	A0185	.SAFETY WALK		EA	1
20	R13390511	R13390511	A0185	.SAFETY WALK		EA	1

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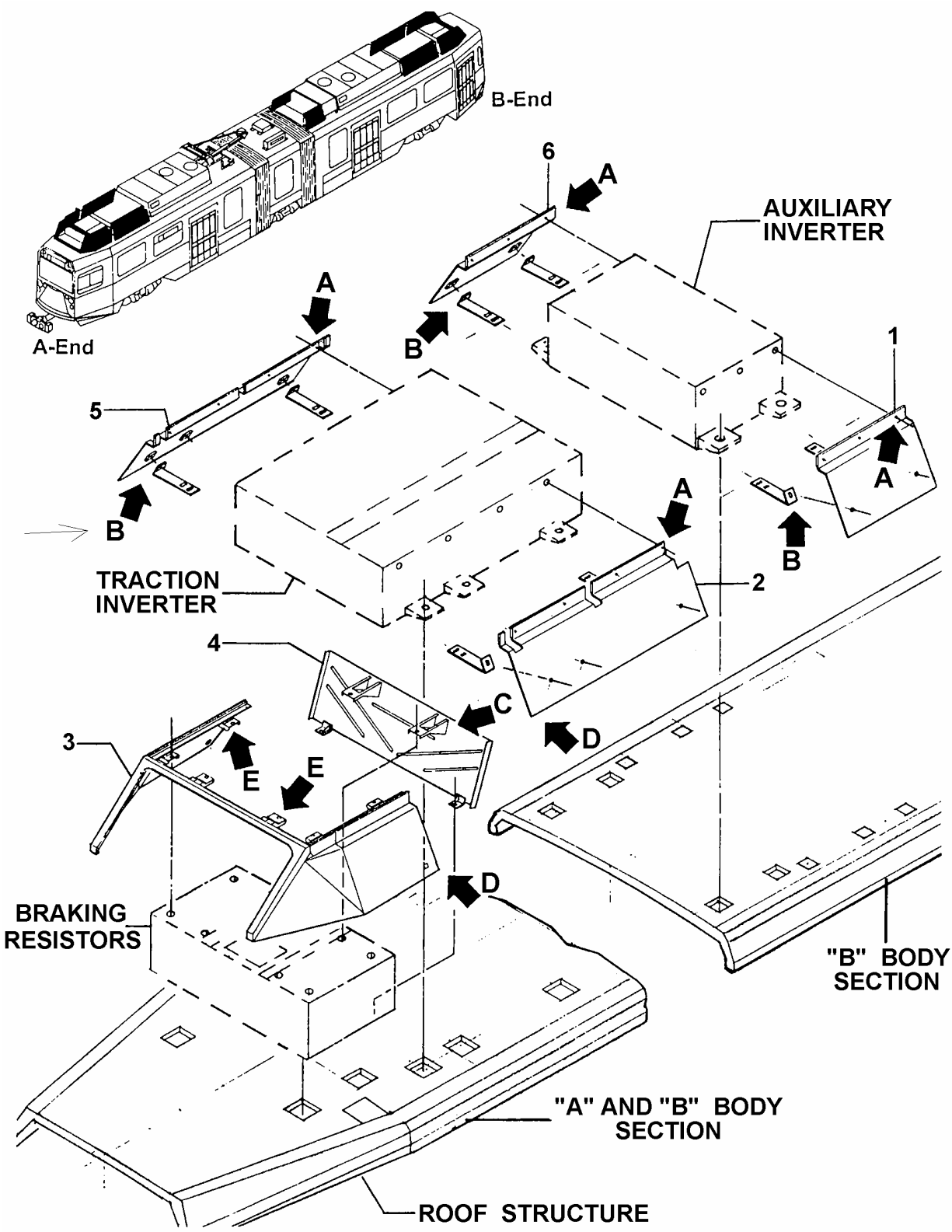

Figure 2-111 Fairing Roof Installation (Sheet 1 of 2)

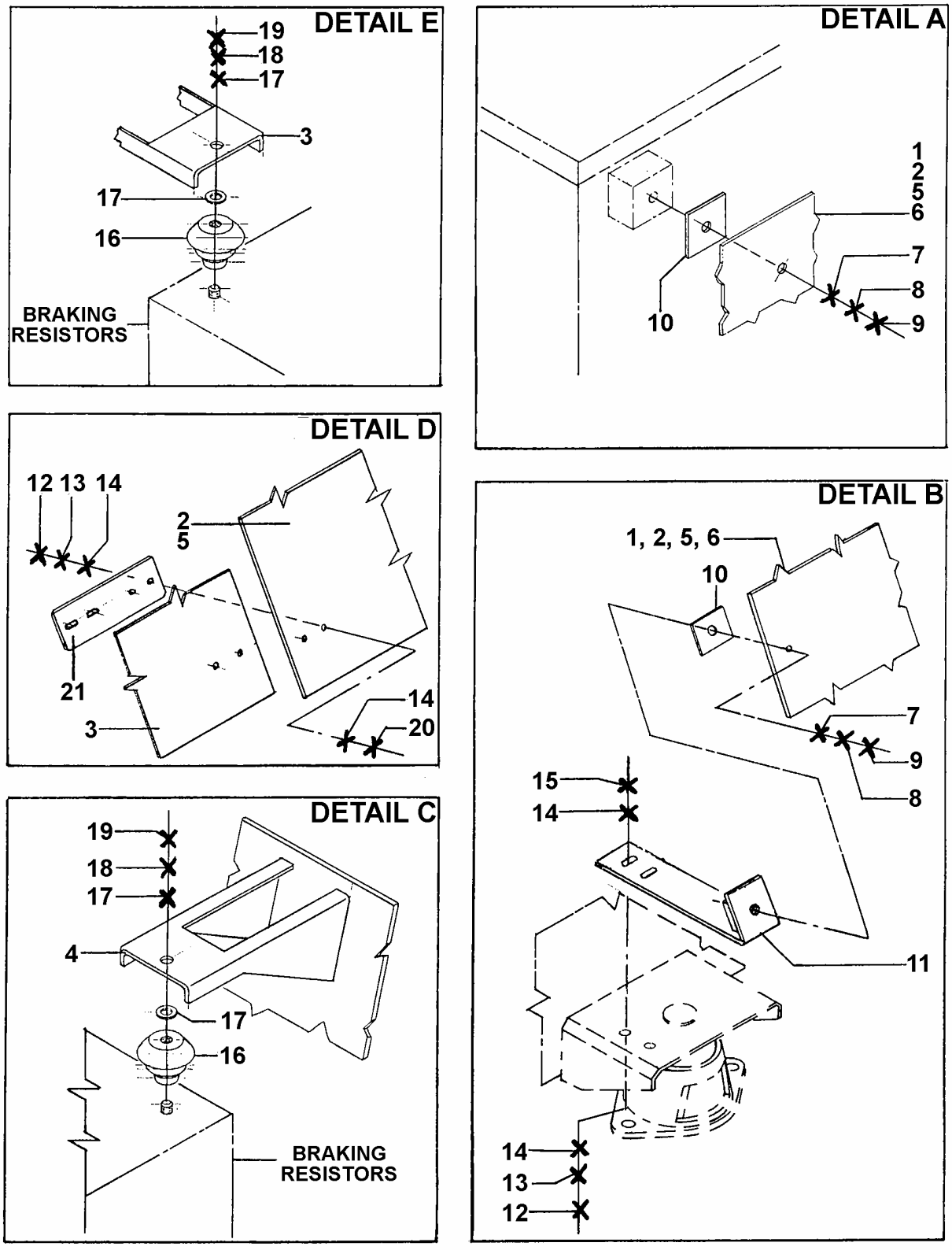

Figure 2-111 Fairing Roof Installation (Sheet 2 of 2)

Fairing Roof Installation (Fig. 2-111)

Section Figure Item	P/N	OEM P/N	OEM Code	Description	MBTA Code	U/M	Q.ty per Assy
02-111-	R12320000	R12320000	A0185	FAIRING ROOF INSTALLATION		EA	1
1	R12320135	R12320135	A0185	.FAIRING LEFT, ASSY		EA	1
2	R12320130	R12320130	A0185	.FAIRING		EA	2
3	R12320100	R12320100	A0185	.FAIRING, WELDING		EA	2
4	R12320107	R12320107	A0185	.DEFLECTOR, ASSY		EA	2
5	R12320129	R12320129	A0185	.FAIRING		EA	2
6	R12320147	R12320147	A0185	.FAIRING RIGHT, ASSY		EA	1
7	R123200006	5/16 STC 514-S	Z9009	.WASHER, PLAIN - 5/16 STC 514 - ATT.PT-TYPES STC 514		EA	34
8	R123200007	5/16 STC 515-S	Z9009	.WASHER, HEL SPRING - 5/16 - ATT.PT STC 515-TYPES STC 515		EA	34
9	R123200005	5/16x3/4 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT5/16x3/4 STC 510 - TYPE S STC 510		EA	34
10	R12320145	R12320145	A0185	.RUBBER SHIM		EA	38
11	R12320141	R12320141	A0185	.SUPPORT		EA	12
12	R1232000010	1/4 STC 542-S	Z9009	.NUT, HEX-1/4 STC 542-TYPE - ATT.PT S STC 542		EA	40
13	R123200009	1/4 STC 515-S	Z9009	.WASHER, HEL SPRING -1/4 - ATT.PT STC 515 - TYPE S STC 515		EA	40
14	R123200008	1/4 STC 514-S	Z9009	.WASHER, PLAIN-1/4 STC 514- - ATT.PT TYPES STC 514		EA	80
15	R1232000011	1/4x1 STC 507 -S	Z9009	.BOLT, HEX - 1/4x1 STC 507 - - ATT.PT TYPES STC 507		EA	24
16	R12320150	1C41132	B0013	.INSULATOR		EA	16
17	R123200002	1/2 STC 514-S	Z9009	.WASHER, PLAIN-1/2 STC 514- - ATT.PT TYPES STC 514		EA	32
18	R123200003	1/2 STC 515-S	Z9009	.WASHER, HEL SPRING -1/2 - ATT.PT STC 515-TYPES STC 515		EA	16
19	R123200001	1/2x3/4 STC 507-S	Z9009	.BOLT, HEX-1/2x3/4 STC 507- - ATT.PT TYPE S STC 507		EA	16
20	R123200004	1/4x3/4 STC 510-S	Z9009	.SCREW, CROSS REC PAN HD - - ATT.PT 1/4x3/4 STC 510 - TYPE S STC 510		EA	16
21	R12320157	R12320157	A0185	.PLATE		EA	4

SECTION 2

CAR BODY

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SECTION 2

CAR BODY

2-1 Abbreviations, Acronyms and Symbols

2-1.1 List of Abbreviations, Acronyms and Symbols

The Abbreviations, Acronyms and Symbols commonly used throughout this manual are given below with their related meaning.

Abbreviation	Meaning
A	Ampere
AC	Alternating current
AFT	After
AIS	American Iron and Steel Institute
APS	Auxiliary Ac power supply
Art. Sect.	Articulation Section
Assy	Assembly
ATP	Automatic Train Protection
AVI	Automatic Vehicle Identification
ATCS	Automatic Train Control System
AWG	American Wire Gauge
AW0	Empty transit vehicle weight
AW1	Empty transit vehicle weight plus seated passengers' load
AW2	Empty transit vehicle weight plus seated and Normal rated standing passengers' load
AW3	Empty transit vehicle weight plus seated and Full rated standing passengers' load
Ay	Applicability Code
BHP	Brake Horse Power
BRK	Brake
BTL	Battery Train Line
Btu	British thermal unit
BCF	Breda Costruzioni Ferroviarie
C	Capacitance
℃	Degrees Centigrade
CB	Circuit Breaker
Cfm	Cubic feet per minute
CL	Center Line
Cont'd	Continued
dB	Decibel

List of Abbreviations, Acronyms and Symbols (cont'd)

Abbreviation	Meaning
Dc	Direct current
DIA	Diameter
Dpt	Department
DTE	Diagnostic Test Equipment
ECU	Electronic Control Unit
EMI	Electromagnetic Interference
℉	Degrees Fahrenheit
Fig./fig	Figure
Fpm	Feet per minute
FRP	Fiberglass Reinforced Plastic
Fpm	Feet per minute
FRP	Fiberglass Reinforced Plastic
Ft	Foot (Linear Measure)
FWD	Forward
gal.	Gallons (Volume measure)
HP	Horse Power
HRWM	Heavy Repair and Workshop Manual
HV	High Voltage
HVAC	Heat Ventilation Air Cooling
Hz	Hertz (Frequency measure)
In	Inches (Linear Measure)
IPC	Illustrated Parts Catalog
IWD	Integrated Wiring Diagrams
Kg	Kilogram
KQ	Auxiliary Relay Panel 1
KR	Auxiliary Relay Panel 2
Lb	Pound (Weight Measure)
lbs	Pounds force
LFC	Low Floor Car
LH	Left Hand
LLRU	Lowest Level Replaceable Unit
LRV	Light Rail (Transit) Vehicle
LV	Low Voltage
Max	Maximum
MBTA	Massachusetts Bay Transportation Authority
MFR	Manufacturer
MHz	Megahertz
min	Minute
M.I.G.	Metal Inert Gas (welding)
Min.	Minimum

List of Abbreviations, Acronyms and Symbols (cont'd)

Abbreviation	Meaning
MM	Maintenance Manual
Mm	Millimeters
mph	Miles per hour
mphps	Miles per hour per second
mphpsps	Miles per hour per second per second
ms	Millisecond
OD	Outside Diameter
oz	Ounces (Weight measure)
Op.	Operator
P/N	Part Number
PA	Public Address
PC	Printed Circuit
PCU	Pneumatic Control Unit
ppm	Part per million
para(s)	Paragraph(s)
PS	Pressure Switch
psi	Pounds per square inch
PSIG	Pounds per Square Inch Gauge
PTE	Portable Test Equipment
PTU	Portable Test Unit
PUR	Polyurethane
rpm	Revolutions per minute
RH	Right Hand
RMSM	Running Maintenance and Service Manual
Qty	Quantity
r.p.m.	Revolutions Per Minute
SAE	Society of American Engineers
SMOM	Scheduled Maintenance and Overhaul Manual
Sec	Second
Sect	Section (Manual Section)
T. of R.	Top of Rail
T.I.G.	Tungsten Inert Gas (welding)
TMM	Trucks Maintenance Manual
VAC	Volt Alternating Current
VDC	Volt Direct Current
w	Watt
µA	Microampere

2-1.2 List of Definitions

The Definitions commonly used throughout this manual are given below with their related meaning.

Definition	Meaning
"A" Body Section	The half of an articulated vehicle containing the pantograph
AFT Truck Side	The Side of the truck ("A" or "B") on which the pilot bar is not fitted.
"A" Truck / "A" Motor Truck	The motor truck installed under "A" body section.
"B" Body Section	The half of an articulated vehicle not containing the pantograph.
"B" Truck / "B" Motor Truck	The motor truck installed under "B" body section.
"C" Truck / "C" Trailer Truck	The trailer truck installed under the articulation section.
Console	The control panel located in the cab directly in front of the operator's seat.
Corrective maintenance	Those actions performed, as a result of a failure, to restore an item to a specified condition.
Failure	The inability of a system, subsystem, assembly, or component to perform its required function.
FWD Truck Side	The side of the truck ("A" or "B") on which the pilot bar is fitted.
High Voltage	High voltage 600 VDC.
Left Hand	Left side of transit vehicle when one looks toward the "A" Body Section Operator's cab from inside the vehicle.

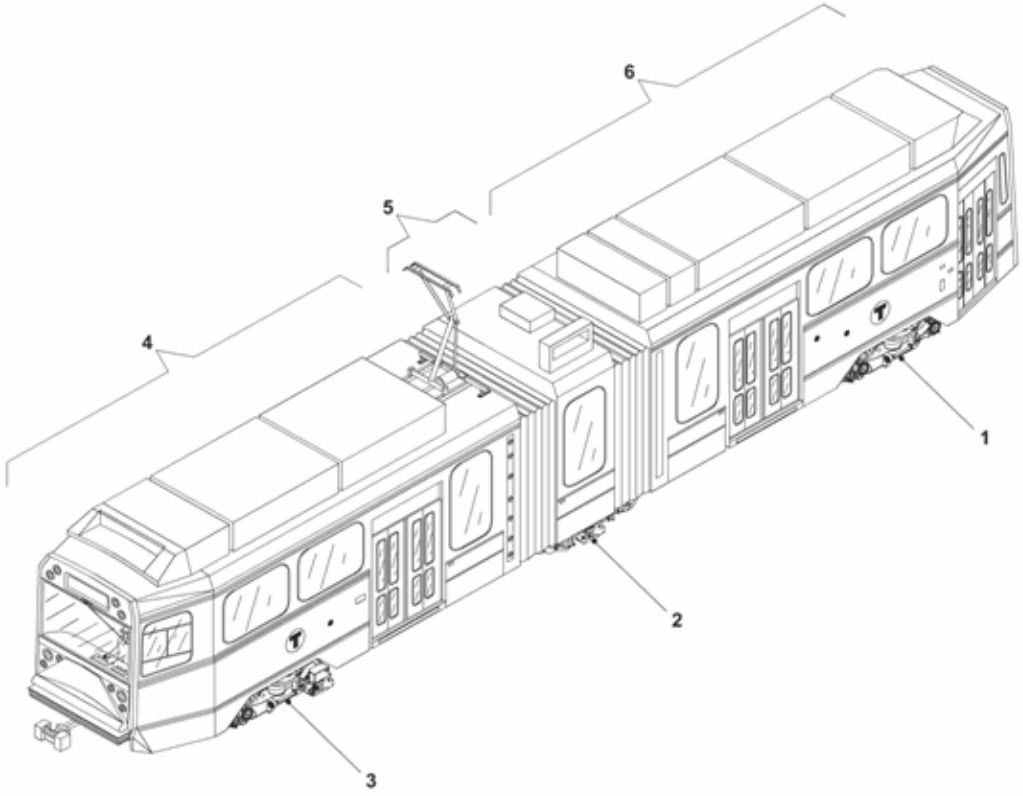
List of Definitions (cont'd)

Definition	Meaning
Low Voltage	The voltage used for most auxiliary equipment on the vehicle, usually between 24 and 45 VDC.
Motor Truck	The truck installed under the "A" or "B" Body Section.
Operator	Person on board who is responsible for train operation in manual modes and for overseeing train operation in the automatic mode.
Pantograph	A device used for current collection from a catenary system. It consists of a dual-strip electrical collection shoe carried by a collapsible and adjustable frame.
Right Hand	Right side of the transit vehicle when one looks toward the "A" body Section Operator's cab from inside the vehicle.
Trailer Truck	The truck installed under articulation section.
Truck LH Side	The side of the truck on which the MFR name is fitted and the wheels are identified by odd numbers (1 & 3).
Truck RH Side	The side of the truck on which the wheels are identified by even numbers (2 & 4).

2-2 Structure

2-2.a Description and Theory of Operation

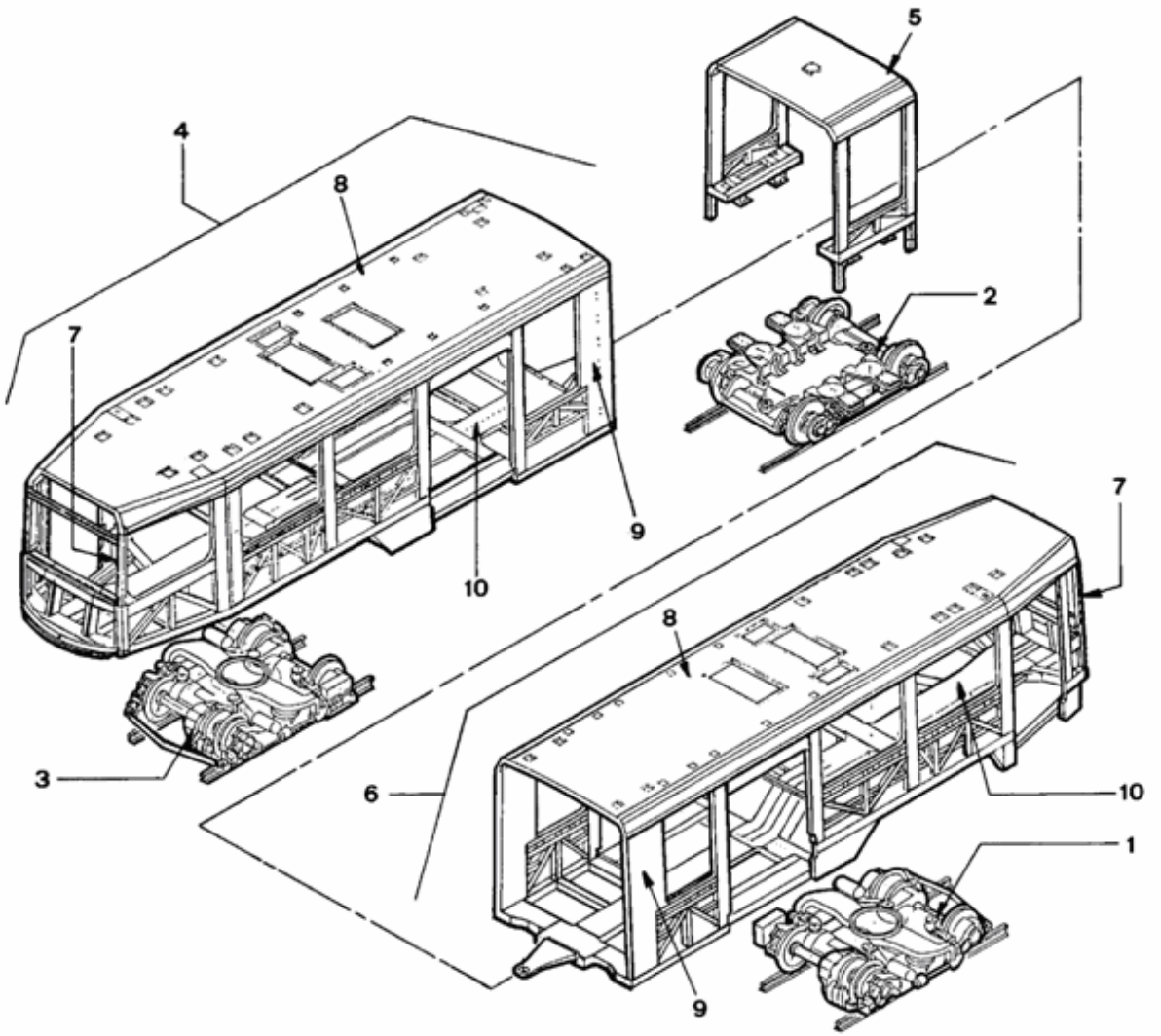
The vehicle consists of three main sections (Refer to Figure 2-2.1) “A” Body Section, “B” Body Section and the Articulation Section (“C” Section). Under these sections are located respectively the “A”,”B” Motor Truck and Trailer Truck (“C” Truck). Each section structure ("A", "B" or "C") is designed to have 30 years service life (under normal service conditions and preventive maintenance operations) without structural repairs or alterations.



1. "B" MOTOR TRUCK
2. TRAILER TRUCK
3. "A" MOTOR TRUCK
4. "A" BODY SECTION
5. ARTICULATION SECTION
6. "B" BODY SECTION
7. END FRAME
8. ROOF
9. SIDEWALL
10. MAIN UNDERFRAME

MM-02-02-01-01

Figure 2-2.1 Vehicle - Assembly (Sheet 1 of 2)

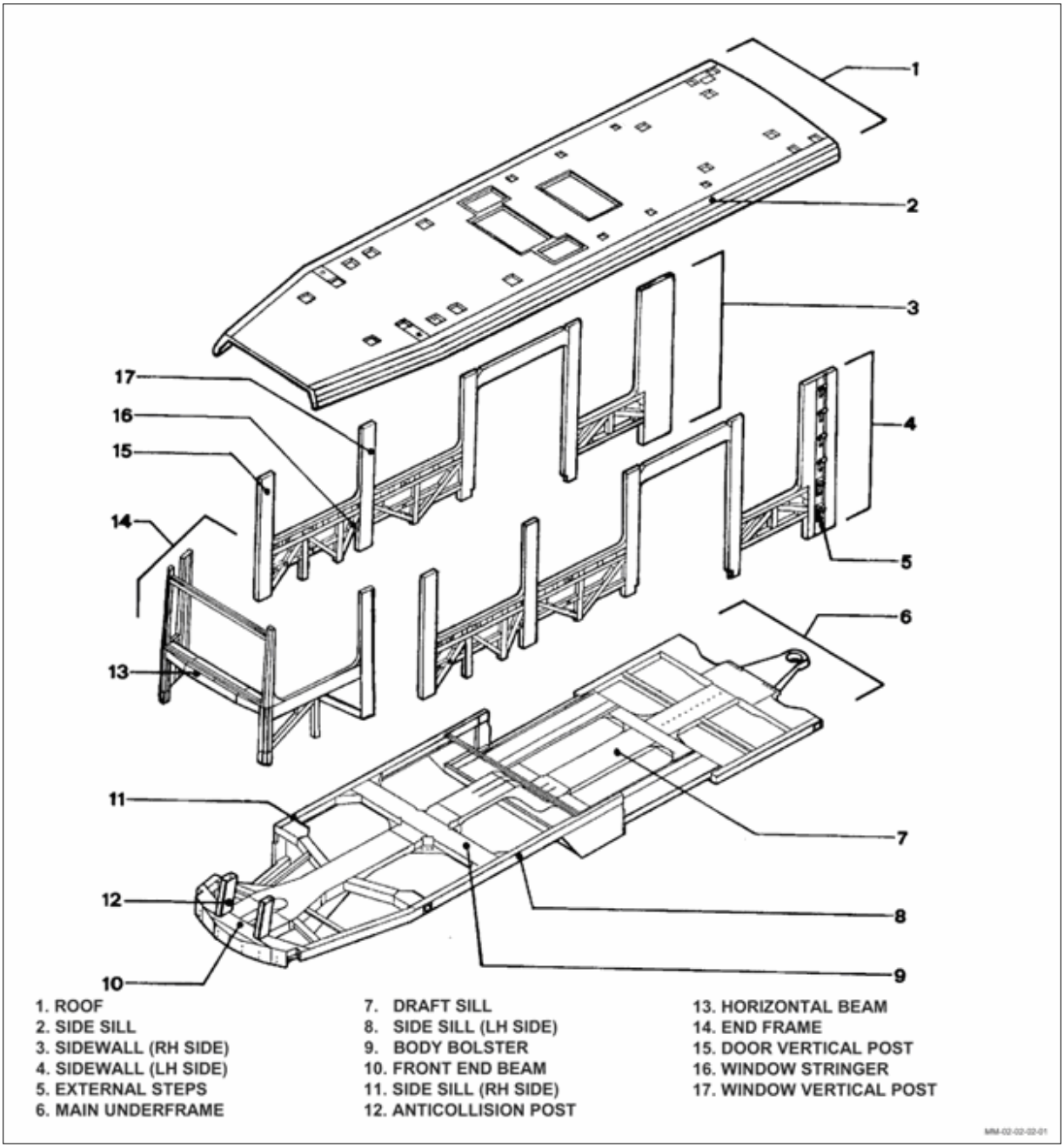


1. "B" MOTOR TRUCK
2. TRAILER TRUCK
3. "A" MOTOR TRUCK
4. "A" BODY SECTION
5. ARTICULATION SECTION
6. "B" BODY SECTION
7. END FRAME
8. ROOF
9. SIDEWALL
10. MAIN UNDERFRAME

Figure 2-2.1 Vehicle – Assembly (Sheet 2 of 2)

Each section structure ("A" or "B") consists of the following main assemblies (Refer to Figure 2-2.2) (welded together): Main Underframe, End Frame, Sidewalls and Roof. Each one of these assemblies is designed to have the required stress resistance, to operate properly and to allow the installation of the vehicle systems components. The vehicle structure is designed to allow, as required, the interchangeability of like subsystem, equipment and components. For assembly components identification and location, refer to Figure 2-2.2.

For Articulation Section ("C" Section) Description, Operation and Maintenance procedure, refer to para 2-5.



The vehicle structure is provided with the following hoisting cavities/lifting pads (Refer to Figure 2-2.1) and tow points to hoist/lift/tow the vehicle during the maintenance operations:

- Eight Hoisting Cavities (Side Sill - Underframe) (four for each vehicle side).
- Two Lifting Pads (Anticlimber - Underframe) (one for each vehicle end).
- Two Tow Points (Anticlimber - Underframe) (one for each vehicle end).

Figure 2-2.2 Vehicle Section Structure - Components

To Perform the hoisting/lifting operations, the following special tools should be used:

- Front Lifting Adapter (P/N R12090410).
- Rear Lifting Adapter – “Z” Bar (P/N R12090400).

If the vehicle is lift / hoisted with the trucks installed, the following special tools must be used to lock the Motor Trucks Primary and Secondary Suspensions:

- Primary Suspension Locking Tool (P/N J35200800).
- Secondary Suspension Locking Tool (P/N J35200850).

For Vehicle Jacking Procedure refer to para 2-6.

Each one of these assemblies is designed to have the required stress resistance, to operate properly and to allow the installation of the vehicle systems components. The vehicle structure is designed to allow, as required, the interchangeability of like subsystem, equipment and components. For assembly components identification and location, refer to Figure 2-2.2.

For Articulation Section ("C" Section) Description, Operation and Maintenance procedure, refer to para 2-5

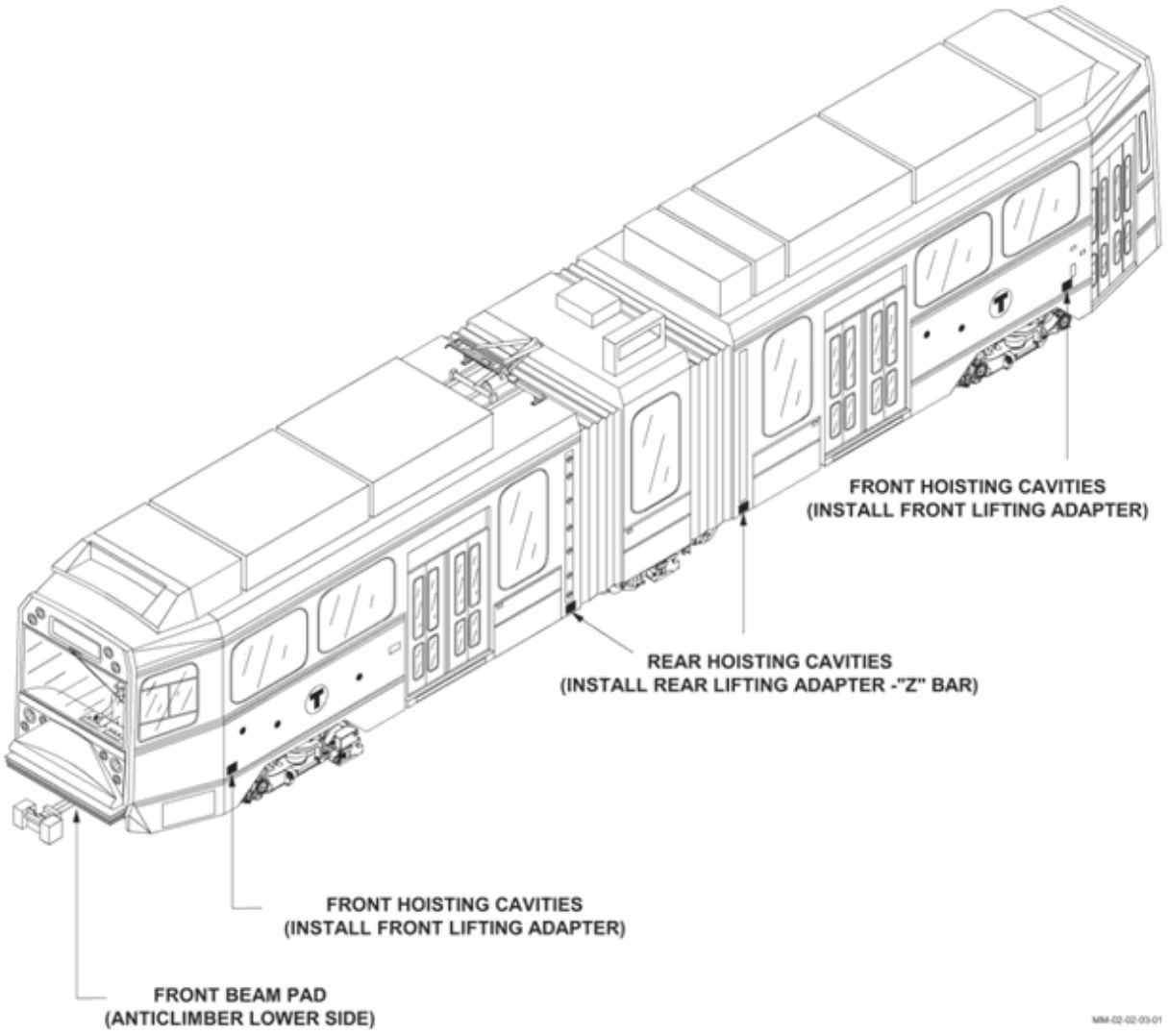


Figure 2-2.3 Vehicle – Hoisting Cavities – Location

2-2.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING VEHICLE STRUCTURE MAINTENANCE PROCEDURES, MAKE SURE THAT THE WHEELS ARE CHOCKED AND THE CONTROL HANDLE IS IN FULL SERVICE BRAKE POSITION TO PREVENT VEHICLE FROM MOVING.**

WARNING: **BEFORE PERFORMING VEHICLE STRUCTURE MAINTENANCE VERIFY THAT THE SHOP POWER IS NOT CONNECTED TO THE VEHICLE.**

WARNING: **BEFORE CLIMBING ON THE ROOF TO PERFORM INSPECTION PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

WARNING: **DURING PAINTING PROCEDURE, WEAR PROTECTIVE CHEMICAL-SPLASH GOGGLES OR FULL FACE SHIELD, AS WELL AS IMPERMEABLE PROTECTIVE CLOTHING. WHERE SPRAY-OVER IS PRESENT, USE A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR FOR ENTIRE SPRAYING TIME END UNTIL ALL VAPORS AND MISTS ARE GONE.**

WARNING: **DURING PAINTING TO PREVENT THE CREATION OF FLAMMABLE CONCENTRATIONS OF VAPOR IN AIR, GOOD NATURAL VENTILATION AND, IF NECESSARY, LOCAL EXHAUST VENTILATION SHOULD BE PROVIDED.**

CAUTION: DO NOT USE ON VEHICLE EXTERNAL SURFACE THE FOLLOWING CLEANING PRODUCTS:

FLUORIDE ACID BRIGHTENERS, STRONG SODIUM HYDROXIDE CLEANERS, STRONG POTASSIUM HYDROXIDE CLEANERS, AMMONIA CLEANERS, SUCH AS WINDEX, OR SIMILAR HOUSEHOLD AMMONIAS, RUST STRIPPERS HAVING A HYDROCLORIACID BASE WILL ATTACK AND STAIN.

CAUTION: DO NOT USE ON WINDOWS THE FOLLOWING CLEANING PRODUCTS:

FLUORIDE ACID BRIGHTENERS, STRONG SODIUM HYDROXIDE CLEANERS, STRONG POTASSIUM HYDROXIDE CLEANERS, ABRASIVE CLEANERS.

CAUTION: DO NOT USE ON RUBBER COMPONENTS THE FOLLOWING PRODUCTS:

METHYLENE CHLORIDE SOLVENTS, COMMERCIAL PAINT STRIPPERS.

2-2.c Fault Isolation

For Structure Assemblies/Components Fault Isolation, as a single units, refer to the related para(s) as shown in the Table 2-2.1.

Table 2-2.1 Structure - Fault Isolation

COMPONENTS	REFERENCE (Para)
Main Underframe	2-2.1.c
End Frame	2-2.2.c
Sidewall	2-2.3.c
Roof	2-2.4.c
Windows	2-2.5.c
External Panels	2-2.6.c

2-2.d Disassembly

- **Structure Assemblies/Components**

  The structure assemblies are joined by welding. When it is necessary to operate on a structure assembly, the operation may not be made until the Car Builder Engineering Dpt. evaluation is completed, and repair parameters and procedures established.

  For Structure Assemblies/Components Disassembly, as a single units, refer to the related para(s) as shown in the Table 2-2.2.

Table 2-2.2 Structure - Disassembly

COMPONENTS	REFERENCE (Para)
Main Underframe	2-2.1.d
End Frame	Not Applicable
Sidewall	2-2.3.d
Roof	Not Applicable
Windows	2-2.5.d
External Panels	2-2.6.d

2-2.e Cleaning/Painting

a) Cleaning

- **Structure Assemblies/Components**

For Structure Assemblies/Components Cleaning, as a single units, refer to the related para(s) as shown in the Table 2-2.3.

Table 2-2.3 Structure - Cleaning

COMPONENTS	REFERENCE (Para)
Main Underframe	2-2.1.e (a)
End Frame	2-2.2.e (a)
Sidewall	2-2.3.e (a)
Roof	2-2.4.e (a)
Windows	2-2.5.e (a)
Skirts and Spoilers	2-2.6.e (a)

- **Vehicle as a whole - Cleaning**

Interior Cleaning Procedure.

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**
  1. Set the vehicle in the following conditions:
     a. Pantograph up.
     b. Interior Lights on.

WARNING: **DURING THE VEHICLE INTERIOR CLEANING PROCEDURE THE HIGH VOLTAGE IS CONNECTED TO THE VEHICLE. FOLLOW MBTA REGULATIONS TO AVOID UNSAFE CONDITIONS.**

2. Vacuum clean the floor and steps using MBTA cleaning tools/equipment.
3. Clean all interior components using cleaning rags, neutral detergent and compressed air (Max 30 PSIG) as necessary.

- **Vehicle Washing Procedure.**

NOTE: It is advised to perform the Interior Cleaning Procedure before Vehicle Washing.

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Check/close doors and cab windows.
  3. Wash the vehicle using MBTA washing equipment.
  4. Check for water leakage from the roof, doors, windows and bellows, staying inside the vehicle during the washing operation.
  5. Clean the external rear-view mirrors using cleaning rags and mild detergent if necessary.

b) Painting

- **General**

The Vehicle Painting Procedure is arranged in the following main steps and the Table 2-2.4 provides the Vehicle Assemblies/Components Painting Index.

WARNING:	**DURING PAINTING PROCEDURE, WEAR PROTECTIVE CHEMICAL-SPLASH GOGGLES OR FULL FACE SHIELD, AS WELL AS IMPERMEABLE PROTECTIVE CLOTHING. WHERE SPRAY-OVER IS PRESENT, USE A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR FOR ENTIRE SPRAYING TIME END UNTIL ALL VAPORS AND MISTS ARE GONE.**

WARNING:	**DURING PAINTING TO PREVENT THE CREATION OF FLAMMABLE CONCENTRATIONS OF VAPOR IN AIR, GOOD NATURAL VENTILATION AND, IF NECESSARY, LOCAL EXHAUST VENTILATION SHOULD BE PROVIDED.**

CAUTION: BEFORE PERFORMING SANDBLASTING PROCEDURE PROTECT ALL SURFACES NOT INVOLVED IN THE OPERATION INCLUDING, BUT NOT LIMITED TO ; GLAZING,RUBBER COMPONENTS,TRUCKS,COUPLER,PANTOGRAPH, BRAKE RESERVOIR AND ANY OTHER SURFACES THAT REMAINS UNPAINTED.

1. Painting Procedure Sheet 1 - Carbon Steel Surfaces:
   a. Main Underframe.
2. Painting Procedure Sheet 2 - Carbon Steel Surfaces:
   a. Upper Linkage Assy.
   b. External rear-view mirrors.
   c. Articulation Section Support.
   d. Inner – Rear View Mirror.

3. Painting Procedure Sheet 3 - Stainless Steel surfaces:
   a. End frame.
   b. Sidewalls.
   c. Roof.
   d. Articulation Section structure.
4. Painting Procedure Sheet 4 - Aluminum Alloy Surfaces:
   a. External Panels.
   b. Side Doors.
   c. Fairings.
5. Painting Procedure Sheet 5 - Fiberglass Reinforced Plastic surfaces:
   a. External Front Panels

Table 2-2.4 Vehicle Assemblies/Components Painting Index

SMOM Para	Component	Material	Color	ProcedureNo.
2-2	- Vehicle - Exterior	CStl	PPG Metallic Grey 33723 PPG Green 43828 Dark Grey RAL 7024 Grey RAL 7042 Black RAL 9011	2
		SStl		3
		AA		4
		FRP		5
2-2.1	- Main Underframe	CStl	Black RAL 9011	1
2-2.2	-- End Frame	SStl	Boston Metallic Silver Base	3
2-2.3	-- Sidewalls	SStl	Boston Metallic Silver Base	3
2-2.4	-- Roof	SStl	Boston Metallic Silver Base	3
2-2.6	-- External Panels	AA	Acrylic pur Green Boston Metallic Silver Boston Base Acrylic pur Gray RAL 7042	4
2-2.6	-- External Front Panels	FRP	Acrylic pur Gray RAL 7042 Acrylic pur Green Boston Enamel	5
2-2.7	-- Fairings and Deflector	AA	Grey RAL 7042	4
Sect. 8	-- External Doors	AA	Light Grey RAL 9006 Dark Grey RAL 7024	4

SMOM Para	Component	Material	Color	ProcedureNo.
2-4.3.1	-- External Rear-View Mirror	CStl	Light Grey RAL 9006	2
2-5.1	-- Articulation Section Structure	SStl	Light Grey RAL 9006	4

Table 2-2.4 Vehicle Assemblies/Components Painting Index (Cont'd)

SMOM Para	Component	Material	Color	ProcedureNo.
2-3.2	-- Interior - Side Liners	FRP	- -	5
Sect. 8	-- Interior - Doors	AA	- -	4
2-3.2	-- Interior - Ceiling Panels	FRP	- -	5
2-3.3	-- Interior - Entrance Walls	FRP	- -	5
2-4.3.2	-- Inner Rear-View Mirrors	CStl	- -	2
2-4.4	-- Cab Dividing Wall	FRP	- -	5
2-4.5	-- Operator Cab Console Frame	AA	- -	4
2-5.1	-- Articulation Section Structure	AA	- -	4
2-5.1	-- Articulation Section Support	CStl	- -	2
2-5.2	-- Articulation Section Panels	FRP	- -	5
Sect. 10	- Motor and Trailer Trucks	- -	- -	Refer to Section 10

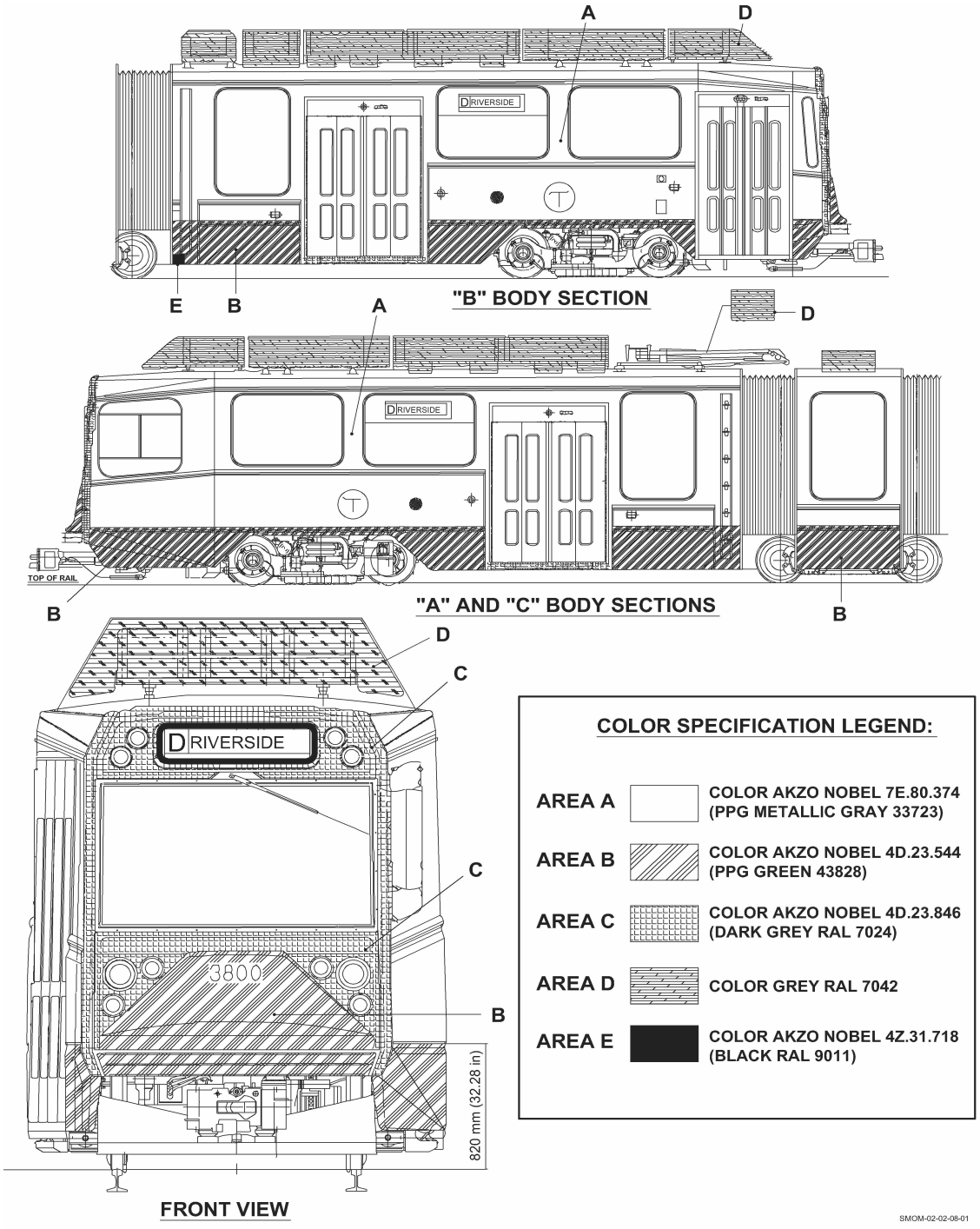


Figure 2-2.4 Car Body Exterior - Painting

- **Painting Procedure No. 1**

  The procedure is applicable for the following Carbon Steel Surfaces:

  - Main Underframe.

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Painting Tools / Equipment (commercial).
  2. Material.

Operation	Product	Akzo Code
Sandblasting	Sand	
Primer application	- Anticorrosion Epoxy Primer - Hardener - Thinner	1A.31.880 8K.81.050 9L.31.000
Painting	- Black RAL 9011 Redox EP 3400 - Hardener - Thinner	4Z.31.718 4Z.31.718 9L.31.000

- **Procedure.**

  1. Surfaces Preparation

CAUTION: BEFORE PERFORMING SANDBLASTING PROCEDURE PROTECT ALL SURFACES NOT INVOLVED IN THE OPERATION.

Prepare the surfaces to be painted by sandblasting. Blasting and cleaning of steel surface must be made immediately before the application of primer to avoid metal oxidation during the period between to the phases. In normal atmosphere condition it is better to apply the anticorrosion primer within 24 hours from blasting. Never let the steel rusting before the painting, independently from the passed time.

NOTE: The sandblasting quality should be correspond to the grade "Sa 22" of ISO 8501/1-88 standard.

2. Primer application

   Spray Application of Epoxy Primer:

- 1A.31.880	Anticorrosion epoxy primer	100 parts
- 8K.81.050	Hardener	25 parts
- 9L.31.000	Thinner	5 – 10 parts

- Application viscosity	20 – 22" CF/4 at 68℉ (20℃)
- Pot-life	6 – 8 hours at 68℉ (20℃)
- Dry film thickness	0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying	24 hours at 68℉ (20℃)
- Complete oven drying	60 min at 158℉ – 176℉(70° – 80℃)

3. Painting Procedure

   Spray Application of Epoxy Micaceous Iron Oxide Finish EP 3400 Black RAL 9011 Series 31.000.

- 4Z.31.718	Redox EP 3400 black RAL 9011	1 pac.
- 4Z.31.718	Hardener	1 pac.
- 9L.31.000	Thinner	10 – 20 %

- Dry film thickness	3.54 - 4.33 mils
- Pot-life	6 – 8 hours at 68℉ (20℃)
- Complete air drying	16 hours at 68℉ (20℃)
- Complete oven drying	60 min at 158℉ – 176℉(70° – 80℃)

- Mixing ratio:

	in volume	comp. "A" 5
		comp. "B" 1
	in weight	comp. "A" 100
		comp. "B" 12.5

- Thinning prospect:

	AIRLESS APPLICATION	CONVENTIONAL APPLICATION
Thinner	5.9L.31.000	5.9L.31.000
% thinning	0-10	10-20
Nozzle	0.48	1.5-2
Pressure (bar)	140-160	3-4
Max. d.t.f. (micron)	150	100

NOTE: Generally, machined surfaces should not be painted. Particularly, the interface surfaces between the truck and the coupler.

- **Painting Procedure No. 2**

  The procedure is applicable for the following Carbon Steel Surfaces:

  - Upper Linkage Assy.
  - External rear-view mirrors.
  - Articulation Section Support.
  - Inner – Rear View Mirror.

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Painting Tools / Equipment (commercial).
  2. Material.

Description	Product	Akzo Code
Sandblasting	Sand	
Primer application	- Anticorrosion Epoxy Primer - Hardener - Thinner	1A.31.880 8K.81.050 9L.31.000
Knife application	- Epoxy Putty 'A' component - Epoxy Putty 'B' component	2Z.31.802 2Z.66.100
Crossed Coat	- Epoxy Undercoat High Thick - Hardener	3A.31.202 8K.81.009
Polyester putty application	- Polyester putty POLYSTOP LP - Hardener	601.001.C 601.001.C
Painting	- Flat Black RAL 9011 Redox EP 3400 - Hardener - Thinner - Acrylic-PUR Grey RAL 7024 - Metallic Silver Boston Base - Hardener	4Z.31.718 4Z.31.718 9L.31.000 4D.23.846 7E.80.374 8K.71.014 9L.31.000

- **Procedure.**

1. Surfaces Preparation

CAUTION: BEFORE PERFORMING SANDBLASTING PROCEDURE PROTECT ALL SURFACES NOT INVOLVED IN THE OPERATION.

Prepare the surfaces to be painted by sandblasting.

NOTE: The quality of sandblasting will correspond to the grade "Sa 22" of ISO 8501.

2. Primer application

Spray application of Epoxy Primer:

- 1A.31.880	Anticorrosion epoxy primer	100 parts
- 8K.81.050	Hardener	25 parts
- 9L.31.000	Thinner	5 – 10 parts

- Application viscosity 20 – 22” CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

The chemical nature of the anticorrosion epoxy primer involves hardening anomalies at low temperature however high temperature involves humidity. Therefore, we advise drying this product in oven when required by the weather and environment conditions.

Epoxy primer has to be recovered with the following coat within 72 hours after drying; after that period it is necessary to lightly sand it.

3. Surface treatment

Knife application of the Epoxy Putty (if necessary):

- 2Z.31.802	Epoxy putty "A" component	3 parts
- 2Z.66.100	Epoxy putty "B" component	1 part

- Pot-life 90 min at 68℉ (20℃)
- Dry film thickness 23.6 mils Max.
- Complete air drying 14 - 16 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

The overall thickness of the coats of putty must be as small as possible and, in any case, not higher than 23.6 mils after drying.

Only for holes less than 7.87x7.87 inches deep could the thickness be 5.9 mils.

We advise preparing a quantity of catalyzed product to use within a time of 45 - 50 min.

The time between each coat must not be less than 14 - 16 hours at room temperature, (not less than 54EF); as an alternative, dry in oven for 60 min at 158 - 176EF (real steel time and temperature).

Low temperature and high related humidity can negatively affect the putty cure. After the last coat, a drying for 14 - 16 hours at room temperature (Min. 54EF), or for 60 min at 158 - 176EF (real steel time and temperature), is required.

- Lightly dry sand the epoxy putty with suitable paper to eliminate the defects caused by the use of the putty knife.
- Apply two Crossed Coats, Wet on Wet, of the Epoxy Undercoat at High Thickness.

- 3A.31.202	Epoxy undercoat high thick	100 parts
- 8K.81.009	Hardener	15 parts

- Application viscosity	as is after catalysis
- Pot-life	3 - 4 hours at 68℉ (20℃)
- Dry film thickness	7.87 - 9.85 mils
- Complete oven drying	60 min at 158℉ – 176℉(70° – 80℃)

- Dry sand the epoxy undercoat at high thickness, using suitable sanding papers.
- In case of flaws, use "POLYSTOP LP" polyester putty with a putty spatula:

- 601.001.C	Polyester putty POLYSTOP LP	100 parts
- 601.001.C	Hardener	2 - 3 parts

- Pot-life	10 min at 68℉ (20℃)
- Complete air drying	40 min at 68℉ (20℃)

- Dry sand the POLYSTOP LP putty using suitable sanding papers.
- Thoroughly clean the sanded surface to remove dust.

4. Final Painting

   Spray Application of Epoxy Redox EP 3400 Black RAL 9011 on the abowed side parts:

- 4Z.31.718	Redox EP 3400 black RAL 9011	1 pac.
- 4Z.31.718	Hardener	1 pac.
- 9L.31.000	Thinner	10 – 20 %

- Dry film thickness 3.54 - 4.33 mils
- Pot-life 8 hours at 68℉ (20℃)
- Complete air drying 16 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)
- Mixing ratio:

in volume	comp. "A"	5
	comp. "B"	1
in weight	comp. "A"	100
	comp. "B"	12.5

- Spray Application of Boston Metallic Silver Base Ral as follows:

- 7E.80.374	Boston Metallic silver base RAL	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.21.021	1-2-3 Fast Thinner	0 – 5 parts

- Application viscosity 20 + 2” CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 1.27 - 1.52 mils

- **Painting Procedure No. 3**

  The procedure is applicable for the following Stainless Steel Surfaces:

  - End frame.
  - Sidewalls.
  - Roof.
  - Articulation Section structure.

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Painting Tools / Equipment (commercial).
  2. Material.

Description	Product	Akzo Code
Degreasing	- Washing Thinner	9L.98.017
Primer application	- Anticorrosion Epoxy Primer - Hardener - Thinner	1A.31.880 8K.81.050 9L.31.000
Knife application	- Epoxy Putty 'A' component - Epoxy Putty 'B' component	2Z.31.802 2Z.66.100
Crossed Coat	- Epoxy Undercoat High Thick - Hardener	3A.31.202 8K.81.009
Polyester putty application	- Polyester putty POLYSTOP LP - Hardener	601.001.C 601.001.C
Painting	- Bosto Metallic silver base RAL (T.B.S.) - Hardener - Thinner	7E.80.374 8K.71.014 9L.21.021
Glossy Clear application	- W/w glossy clear series 23.000 - Hardener	5K.23.060 8K.71.014

3. Surfaces Preparation

   Prepare the surfaces to be painted degreasing them using washing thinner 9L.98.017.

4. Primer application

   Spray application of Epoxy Primer:

- 1A.31.880	Anticorrosion epoxy primer	100 parts
- 8K.81.050	Hardener	25 parts
- 9L.31.000	Thinner	5 – 10 parts

- Application viscosity 20 – 22” CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

   The chemical nature of the anticorrosion epoxy primer involves hardening anomalies at low temperature and high temperature involves humidity. Therefore, we advise to dry this product in oven when required by the weather and environment conditions.

   Epoxy primer has to be recovered with the following coat within 72 hours from drying; after that period it is necessary to lightly sand it.

5. Surfaces treatment

   Stop knife application of the Epoxy Putty (if necessary):

- 2Z.31.802	Epoxy putty "A" component	3 parts
- 2Z.66.100	Epoxy putty "B" component	1 part

- Pot-life 90 min at 68℉ (20℃)
- Dry film thickness 23.6 mils Max.
- Complete air drying 14 - 16 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

   The overall thickness of the coats of putty must be as small as possible and, in any case, not higher than 23.6 mils after drying.

   Only for holes less than 7.87x7.87 inches deep could the thickness be 5.9 mils.

   We advise preparing a quantity of catalyzed product to use within a time of 45 - 50 min.

   The time between each coat must not be less than 14 - 16 hours at room temperature, (not less than 54EF); as an alternative, dry in oven for 60 min at 158 - 176EF (real steel time and temperature).

Low temperature and high related humidity can negatively affect the putty cure. After the last coat, a drying for 14 - 16 hours at room temperature (Min. 54EF), or for 60 min at 158 - 176EF (real steel time and temperature), is required.

- Lightly dry sand the epoxy putty with suitable paper to eliminate the defects caused by the use of putty knife.
- Apply two Crossed Coats, Wet on Wet, of the Epoxy Undercoat at High Thickness.

- 3A.31.202	Epoxy undercoat high thick	100 parts
- 8K.81.009	Hardener	15 parts

- Application viscosity as is after catalysis
- Pot-life 3 - 4 hours at 68℉ (20℃)
- Dry film thickness 7.87 - 9.85 mils
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

- Dry sand the epoxy undercoat at high thickness, using suitable sanding papers.
- In case of flaws, use "POLYSTOP LP" polyester putty with a putty spatula:

- 601.001.C	Polyester putty POLYSTOP LP	100 parts
- 601.001.C	Hardener	2 - 3 parts

- Pot-life 10 min at 68℉ (20℃)
- Complete air drying 40 min at 68℉ (20℃)

- Dry sand the POLYSTOP LP putty using suitable sanding papers.
- Thoroughly clean the sanded surface to remove dust.

6. Final Painting

Spray Application of Boston Metallic Silver Base RAL enamel on the Sidewalls, the End Frames, and the Roof (refer to Figure 2-2.4).

- Spray Application of Boston metallic silver base as follows :

- 7E.80.374	Boston Metallic silver base RAL 9006	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.21.021	Thinner	50 – 60 parts

- Application viscosity 15 - 16” CF/4 at 68℉ (20℃)
- Dry film thickness 0.78 - 0.98 mils
- Masking tape after 15 - 20 min

- Spray application of glossy clear over the acrylic-PUR top coat (10-20 min after application):

  - 5K.23.060 W/w glossy clear series 23.000 100 parts
  - 8K.71.014L Hardener 50 parts

  - Application viscosity as is after catalysis
  - Pot-life 4 - 5 hours at 68℉ (20℃)
  - Dry film thickness 2.36 - 2.76 mils
  - Complete air drying 1 hour at 140 ℉ – 176℉(60° – 80℃)

- Low temperature and high related humidity can negatively affect the putty cure. After the last coat, a drying for 14 - 16 hours at room temperature (Min. 54EF), or for 60 min at 158 - 176EF (real steel time and temperature), is required.

Painting Procedure No. 4

The procedure is applicable for the following Aluminum Alloy Surfaces:

- Side Panels.
- Side Doors.
- Fairings.

- **Reference Information.**

1. Tools / Equipment.
   - MBTA approved Painting Tools / Equipment (commercial).
2. Material.

Description	Product	Akzo Code
Surface Treatment	- Chromate or Phosphochromate treatment	
Primer application	- Anticorrosion Epoxy Primer - Hardener - Thinner	1A.31.880 8K.81.050 9L.31.000
Knife application	- Epoxy Putty 'A' component - Epoxy Putty 'B' component	2Z.31.802 2Z.66.100
Crossed Coat	- Epoxy Undercoat High Thick - Hardener	3A.31.202 8K.81.009
Polyester putty application	- Polyester putty POLYSTOP LP - Hardener	601.001.C 601.001.C
Painting	- Acrylic-Pur Green Boston - Hardener - Thinner - Metallic Silver Boston Base - Thinner - Acrylic-Pur Gray RAL 7042	4D.23.544 8K.71.014 9L.31.000 7E.80.374 9L.21.021
Glossy Clear application	- W/w glossy clear series 23.000 - Hardener	306.000.L 516.000.L

3. Surfaces Preparation.

   Prepare the surfaces to be painted by treating them with chromate 8in according to UNI 9921 Class 2) or phosphochromate treatment (in according to UNI 9921 Class 5) in according to B.C.F. Specification V.02.R01 MTE/STE/508164 para. 5.1.4.

4. Primer application

   Spray application of Epoxy Primer:

- 1A.31.270	Anticorrosion epoxy primer	100 parts
- 8K.81.050	Hardener	25 parts
- 9L.31.000	Thinner	5 – 10 parts

- Application viscosity	20 – 22” CF/4 at 68℉ (20℃)
- Pot-life	6 – 8 hours at 68℉ (20℃)
- Dry film thickness	0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying	24 hours at 68℉ (20℃)
- Complete oven drying	60 min at 158℉ – 176℉(70° – 80℃)

   The chemical nature of the anticorrosion epoxy primer involves hardening anomalies at low temperatures, and humidity at high temperatures. Therefore, we advise drying this product in an oven when necessary due to environmental conditions.

   Epoxy primer has to be recovered with the following coat within 72 hours after drying; after that period it is necessary to lightly sand it.

5. Spray application of Epoxy Primer:

- 5.1A.31.880	Anticorrosion epoxy primer	100 parts
- 5.8K.81.050	Hardener	25 parts
- 5.9L.31.00	Thinner	5 – 10 parts

- Application viscosity	20 – 22” CF/4 at 68℉ (20℃)
- Pot-life	6 – 8 hours at 68℉ (20℃)
- Dry film thickness	0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying	24 hours at 68℉ (20℃)
- Complete oven drying	60 min at 158℉ – 176℉(70° – 80℃)

   Within maximum 10 days from drying, the primer could receive the following substrate by an accurating cleaning. Over this limit it is necessary to go on with a light sanding and accurate cleaning.

6. Surface treatment

   Stop knife application of the Epoxy Putty (if necessary):

   - 2Z.31.802 Epoxy putty "A" component 3 parts
   - 2Z.66.100 Epoxy putty "B" component 1 part

   - Pot-life 90 min at 68℉ (20℃)
   - Dry film thickness 23.6 mils Max.
   - Complete air drying 14 - 16 hours at 68℉ (20℃)
   - Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

   The overall thickness of the layers of filler must be the slightest possible and in no event must it exceed, after drying and sanding, 23.6 mils.

   For occasional cavities whose dimensions are less than 7.8x7.8 inches the thickness of the filler may reach 5.9 mils, after drying and sanding.

   We advise preparing a quantity of catalyzed product to use within a time of 45 - 50 min.

   The time between each coat must not be less than 14 - 16 hours at room temperature, (not less than 54EF); as an alternative, dry in oven for 60 min at 158 - 176EF (real steel time and temperature).

   Low temperature and high related humidity can negatively affect the putty cure. After the last coat, a drying for 14 - 16 hours at room temperature (Min. 54EF), or for 60 min at 158 - 176EF (real steel time and temperature), is required.

   Lightly dry sand the epoxy putty with suitable paper to eliminate the defects caused by the use of putty knife.

7. Epoxy Primer Application.

   Only if epoxy putty has been applied, spray application of epoxy primer:

   - 5.1A.31.880 Anticorrosion epoxy primer 100 parts
   - 5.8K.81.050 Hardener 25 parts
   - 5.9L.31.00 Thinner 5 – 10 parts

   - Application viscosity 20 – 22” CF/4 at 68℉ (20℃)
   - Pot-life 6 – 8 hours at 68℉ (20℃)
   - Dry film thickness 0.001965 in – 0.002358 in (50 – 60 microns)
   - Complete air drying 24 hours at 68℉ (20℃)
   - Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

   The chemical nature of anticorrosion epoxy primer involves hardening anomalies at low temperature and high relative humidity. Therefore, we

advise to dry this product in oven when required by weather and environment conditions.

Alternative: in alternative to the application of the epoxy primer, it is possible to apply the epoxy undercoat at the high thickness:

- 3A.31.202 Epoxy undercoat high thick 100 parts
- 8K.81.009 Hardener 15 parts

- Application viscosity as is after catalysis
- Pot-life 3 - 4 hours at 68℉ (20℃)
- Dry film thickness 7.87 - 9.85 mils
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

- Dry sand the epoxy undercoat at high thickness, using suitable sanding papers.
- In case of flaws, use "POLYSTOP LP" polyester putty with a putty spatula:

- 601.001.C Polyester putty POLYSTOP LP 100 parts
- 601.001.C Hardener 2 - 3 parts

- Pot-life 10 min at 68℉ (20℃)
- Complete air drying 40 min at 68℉ (20℃)

- Dry sand the POLYSTOP LP putty using suitable sanding papers.
- Thoroughly clean the sanded surface to remove dust.

8. Final Painting

Spray Application of Acrylic-Polyurethane metallic silver base RAL 9006 color on the Doors:

- 7E.80.350 Metallic silver base RAL 9006 100 parts
- 516.000.L Hardener 50 parts
- 413.000.L 1-2-3 Fast Thinner 100 parts

- Application viscosity 15 - 16” CF/4 at 68℉ (20℃)
- Dry film thickness 0.78 - 0.98 mils
- Masking tape after 15 min

- Spray Application of Acrylic-Polyurethane Green Boston enamel on the Low side Panels (refer to Figure 2-2.4, area B).

- Application of PUR Green Boston enamel of the Low Side Panels:

- 4D.23.544	Acrylic-Polyurethane Green Boston	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.31.000	Thinner	0 – 5 parts

- Application viscosity 20 + 2" CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 1.97 - 2.36 mils

- Spray application of glossy clear over the acrylic - PUR top coat (after 30 min at 140EF or 3 - 4 hours at 68EF):

- 5K.23.060	Glossy Acril-Pur Ms Clear Coat	100 parts
- 8K.71.014L	Hardener	50 parts

- Application viscosity as is after catalysis
- Pot-life 4 - 5 hours at 68℉ (20℃)
- Dry film thickness 2.36 - 2.76 mils
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

In case more than 48 hours will have passed after the application of the dark grey Enamel, before the application of clear coat, it is necessary to lightly sand with fine scotch-brite.

- Spray Application of Boston Metallic Silver Base Ral as follows:

- 7E.80.374	Boston Metallic silver base RAL 9006	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.21.021	1-2-3 Fast Thinner	0 – 5 parts

- Application viscosity 20 + 2" CF/4 at 68℉ (20℃)
- Pot-life 6 - 8 hours at 68℉ (20℃)
- Dry film thickness 1.27 - 1.52 mils

- After 15 - 20' from base application, to spry:

- 5.5K.23.060	Glossy Acril-Pur Ms Clear Coat	100 parts
- 5.8K.71.014L	Hardener	50 parts

- Application viscosity as is after catalysis
- Pot-life 4 - 5 hours at 68℉ (20℃)
- Dry film thickness 2.36 - 2.76 mils
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70°– 80℃)

- Spray application of PUR grey RAL 7042 Enamel on the Fairings.

Low temperature and high related humidity can negatively affect the putty cure. After the last coat, a drying for 14 - 16 hours at room temperature (Min. 54EF), or for 60 min at 158 - 176EF (real steel time and temperature), is required.

Lightly dry sand the epoxy putty with suitable paper to eliminate the defects caused by the use of putty knife.

Apply two Crossed Coats, Wet on Wet, of the Epoxy Undercoat at High Thickness.

Painting Procedure No. 5

The procedure is applicable for the following Fiberglass Reinforced Plastic Surfaces:

- External Front Panels

- **Reference Information.**

1. Tools / Equipment.
   - MBTA approved Painting Tools / Equipment (commercial).
2. Material.

Description	Product	Akzo Code
Sanding, grinding or brushing		
Degreasing	- Washing Thinner	9L.98.017
Primer application	- Anticorrosion Epoxy Primer	1A.31.880
	- Hardener	8K.81.050
	- Thinner	9L.31.000
Painting	- Acrylic-PUR Grey RAL 7024	4D.23.846
	- Hardener	516.000.L
	- Thinner	9L.31.000
	- Acrylic-PUR Green Boston Enamel	4D.26.54
	- Hardener	8K.71.014

- Surface Preparation
  - Roughen the surface to be painted by sanding, grinding or brushing it.
  - Carefully degrease using washing thinner 9L.98.017.
- Primer application
  - Spray application of epoxy primer:

- 1A.31.880	Anticorrosion epoxy primer	100 parts
- 8K.81.050	Hardener	25 parts
- 9L.31.00	Thinner	5 – 10 parts

- Application viscosity 20 – 22” CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 0.001965 in – 0.002358 in (50 – 60 microns)
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

The chemical nature of the anticorrosion epoxy primer involves hardening anomalies at low temperature and high relative humidity. Therefore, we advise to dry this product in oven when required by weather and environment conditions.

- Surfaces Treatment
    - Stop knife application of polyester epoxy (if necessary):

- 27.31.802 Epoxy putty "A" component 3 parts
- 601.001.C Epoxy putty "B" component 1 part

- Application viscosity as is after catalysis
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)
- Dry film thickness 23.6 mils Max.
- Pot-life 90 min at 68℉ (20℃)
- Complete air drying 14 - 16 hours at 68℉ (20℃)

- Lightly dry sand the polyester putty with suitable sanding paper to eliminate the defects caused by the use of the putty knife.
- Spray application of epoxy primer (if polyester putty has used):

- 1A.31.880 Anticorrosion epoxy primer 100 parts
- 8K.81.050 Hardener 25 parts
- 9L.31.00 Thinner 5 – 10 parts

- Application viscosity 20 – 22” CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 3.15 - 3.94 mils
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

- Dry sand the epoxy primer using suitable sanding papers.
- Thoroughly clean the sanded surface to remove dust.

- Final Painting.

  - Spray application of Acrylic-Polymetanic Grey RAL 7024 color on the Shells: External upper side, External LH and RH side and on the External lower side.

- 4D.23.846	Acrylic-PUR RAL 7024 enamel	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.31.000	Thinner	0 – 5 parts

- Application viscosity 20 + 2" CF/4 at 68℉ (20℃)
- Pot-life 6 – 8 hours at 68℉ (20℃)
- Dry film thickness 50 - 60 mils

  - After 30' at 140 ℉ or 3 - 4 hours at 68 ℉ spry a pplication of:

- 5.5K.23.060	Glossy Acril-Pur Ms Clear Coat	100 parts
- 5.5K.71.014	Hardener	50 parts

- Application viscosity as is after catalysis
- Pot-life 4 - 5 hours at 68℉ (20℃)
- Dry film thickness 2.36 - 2.76 mils
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

NOTE: in case more than 48 hours will pass after the application of the grey enamel, before the application of clear coat it is necessary to sand lightly with fine scotch-brite.

  - Spray application of Acrylic-Polymetanic Grey Boston color on the External lower shell as shown in the Figure 2-2.4.

- 4D.23.544	Acrylic-PUR RAL 7024 enamel	100 parts
- 8K.71.014	Hardener	50 parts
- 9L.31.000	Thinner	0 – 5 parts

  - After 30' at 140 ℉ or 3 - 4 hours at 68 ℉ spry a pplication of:

- 5.5K.23.060	Glossy Acril-Pur Ms Clear Coat	100 parts
- 5.5K.71.014	Hardener	50 parts

- Application viscosity as is after catalysis
- Pot-life 4 - 5 hours at 68℉ (20℃)
- Dry film thickness 2.36 - 2.76 mils
- Complete air drying 24 hours at 68℉ (20℃)
- Complete oven drying 60 min at 158℉ – 176℉(70° – 80℃)

NOTE: In case more than 48 hours will pass after the application of the grey enamel, before the application of clear coat it is necessary to sand lightly with fine scotch-brite.

2-2.f Inspection

a) Interior Inspection.

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Check conditions of the following items:
     a. Air grille (Air Comfort System).
     b. Ceiling Panels, Gableboards and Air-Light Fixtures.
     c. Stanchions, Hand Rails, Windscreen Panels and equipment installed on.
     d. Windows and Windshields.
     e. Side Destination Signs.
     f. Passenger Seats.
     g. Inner Rubbers, Side Liners and controls installed on.
     h. Cab Dividing Walls and Cab Doors.
     i. Fare Boxes.
     j. Extinguishers.
     k. Doors, Steps and Bridgeplates.
     l. Operator Seat, Op. Console, Cab Cabinets Panels and Inner Rear-View Mirrors.
     m Communication Equipment.
     .
     n. Floor Rubber Sheets, Floor Traps and Steps.
  3. Inspection results must be recorded on Defect Report Cards, to allow the planning of Maintenance Operations.

b) Exterior Inspection.

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.

     NOTE: It is advised to walk around the vehicle in clockwise direction, starting from A2 Door (LH Side).

  2. Check vehicle conditions (painting, damages, glass).
  3. Check conditions of the following items:
     a. Pilot Bars and antenna mounting.
     b. External side panels.
     c. Doors.
     d. Windows and Door Windows.
     e. Sidewalls and lights and controls installed on.
     f. Bellows.
     g. Couplers.
     h. Head, Tail, Marker, Trouble and Turn Lights.
     i. Windshield, Windshield Wiper Blade.
     j. Sand Fill-Up Door.
     k. External Rear-View Mirrors.
     l. External Steps.
     m Equipment installed on trucks.
     .
  4. Using the maintenance key open the external side panel covering the batteries and inspect equipment condition, for cracks or signs of overheating.
  5. Check for oil/grease leakage on trucks components.
  6. Check that Battery Indicator light is OFF.
  7. Check and fill up the sanding system and windshield washer system perform functional test.
  8. Inspection results must be recorded on Defect Report Cards, to allow the planning of Maintenance Operations.

2-2.g Inspection

2-2.h

Since the Structure consists of separate items, the Repair is described in the para(s) related to each item, as shown in Table 2-2.5.

Table 2-2.5 Structure - Repair

COMPONENTS	REFERENCE (Para)
Main Underframe	2-2.1.g
End Frame	2-2.2.g
Sidewall	2-2.3.g
Roof	2-2.4.g
Windows	2-2.5.g
External Panels	2-2.6.g

2-2.i Reassembly

Since the Structure consists of separate items, the Reassembly is described in the para(s) related to each item, as shown in Table 2-2.6.

Table 2-2.6 Structure - Reassembly

COMPONENTS	REFERENCE (Para)
Main Underframe	Not Applicable
End Frame	Not Applicable
Sidewall	2-2.3.g
Roof	Not Applicable
Windows	2-2.5.g
External Panels	2-2.6.g

2-2.j Adjustment/Test

a) Adjustment

- **Vehicle as a whole**

  For vehicle leveling procedure, refer to Section 10, para 10-5.

- **Structure**

  The structure's assemblies are designed to not require Adjustment/Test during vehicle operating life.

b) Test

Each ("A or "B") Vehicle Section structure is provided with a Main Underframe. The Main Underframe is a structural assembly on which the floor is mounted and joined to sides, ends, trucks, couplers and system components. The Main Underframe (Refer to Figure 2-2.5) consists of: one Draft Sill (consisting of four parts) (7), two Cross Beams (11), one Anticlimber Beam (10), two High Floor Sill (5), two Low Floor Side Sills (2), one Body Bolster (6), two Central Door Cross Beams (3), two Cross Beams (4), one Coupler Support (8) and two Very Strong Anticollision Vertical Post (9) welded together.

The anticlimber have the same height and profile as the No. 7 cars.

The main underframe components are made with E 490 D high-strength carbon steel, except Draft Sill and Body Bolster, which are made with E 490 D and CORTEN B carbon steel.

2-2.1 Main Underframe

2-2.1.a Description and Theory of Operation

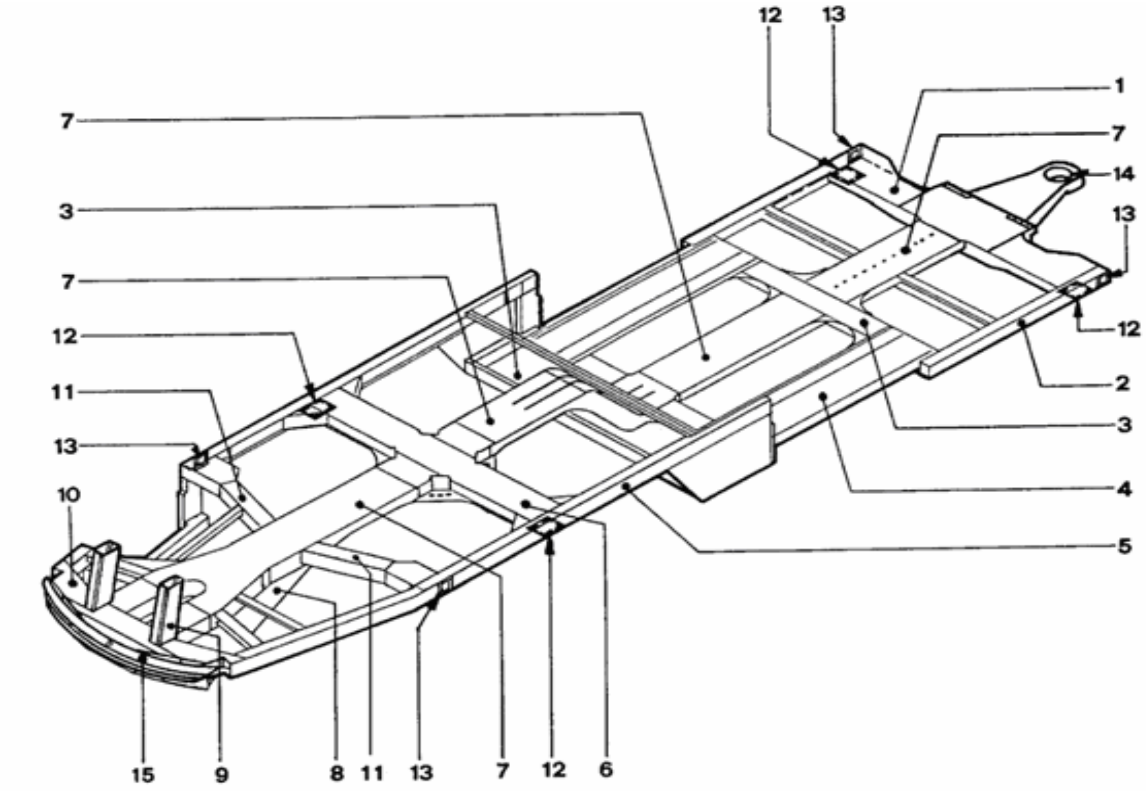
Each ("A or "B") Vehicle Section structure is provided with a Main Underframe. The Main Underframe is a structural assembly on which the floor is mounted and joined to sides, ends, trucks, couplers and system components. The Main Underframe (Refer to Figure 2-2.5) consists of: one Draft Sill (consisting of four parts) (7), two Cross Beams (11), one Anticlimber Beam (10), two High Floor Sill (5), two Low Floor Side Sills (2), one Body Bolster (6), two Central Door Cross Beams (3), two Cross Beams (4), one Coupler Support (8) and two Very Strong Anticollision Vertical Post (9) welded together.

The anticlimber have the same height and profile as the No. 7 cars.

The main underframe components are made with E 490 D high-strength carbon steel, except Draft Sill and Body Bolster, which are made with E 490 D and CORTEN B carbon steel.

The main underframe is designed to allow the installation of Couplers (on Coupler Support (8)), Motor Trucks (on Body Bolster (6)), Car Body Connection (on Articulation Support (14)), System Components, Pipings, Doors and Bridgeplates.

Hoisting cavities and lifting pads are provided to allow vehicle jacking procedure.



1. BEAM ON ARTICULATION
2. LOW FLOOR SIDE SILLS
3. CENTRAL DOOR CROSS BEAM
4. CROSS BEAM
5. HIGH FLOOR SILLS
6. BODY BOLSTER
7. DRAFT SILL
8. COUPLER SUPPORT
9. ANTICOLLISION VERTICAL POST
10. ANTICLIMBER BEAM
11. CROSS BEAM
12. LIFTING PADS
13. HOISTING CAVITIES
14. ARTICUALTION SUPPORT
15. ANTICLIMBER

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Figure 2-2.5 Main Underframe - Components

The front End Anticlimber Beam is boxed and provided with the Anticlimber (15) to prevent, under collision, one vehicle from climbing over the other.

The Draft Sill is designed to withstand both normal and exceptional loads applied to the coupler and to the Anticlimber Beam (anticollision beam).

The Beam on Articulation is boxed and adequately shaped to allow connection with Articulation Section through the Articulation Support (14).

A corrosion resistant, coating is applied to the entire underframe including the inside of the side and end sheets.

2-2.1.b Specific Safety Precautions

WARNING:	**BEFORE PERFORMING MAIN UNDERFRAME MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.** **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-2.1.c Fault Isolation

The Main Underframe is designed to have no structural damages during the normal vehicle's operating life.

For this reason, in normal service conditions, Main Underframe repair operations will be necessary only for railroad accident/damages.

When a structural damage is detected, the repair may not be made until a Car-Builder Dpt. engineering evaluation is completed and repair parameters and procedure established.

2-2.1.d Disassembly

The Main Underframe Components are joined by welding. The only components that require the removal are the following:

– Anticlimber Removal.

– Articulation Support Removal.

a) Anticlimber Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Anticlimber, proceed as follows (Refer to Figure 2-2.6):

WARNING:	**ANTICLIMBER WEIGHS 88 LB (40 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Support the anticlimber (4).
3. Remove bolts (3), washers (2) and nuts (1).
4. Remove anticlimber (4).

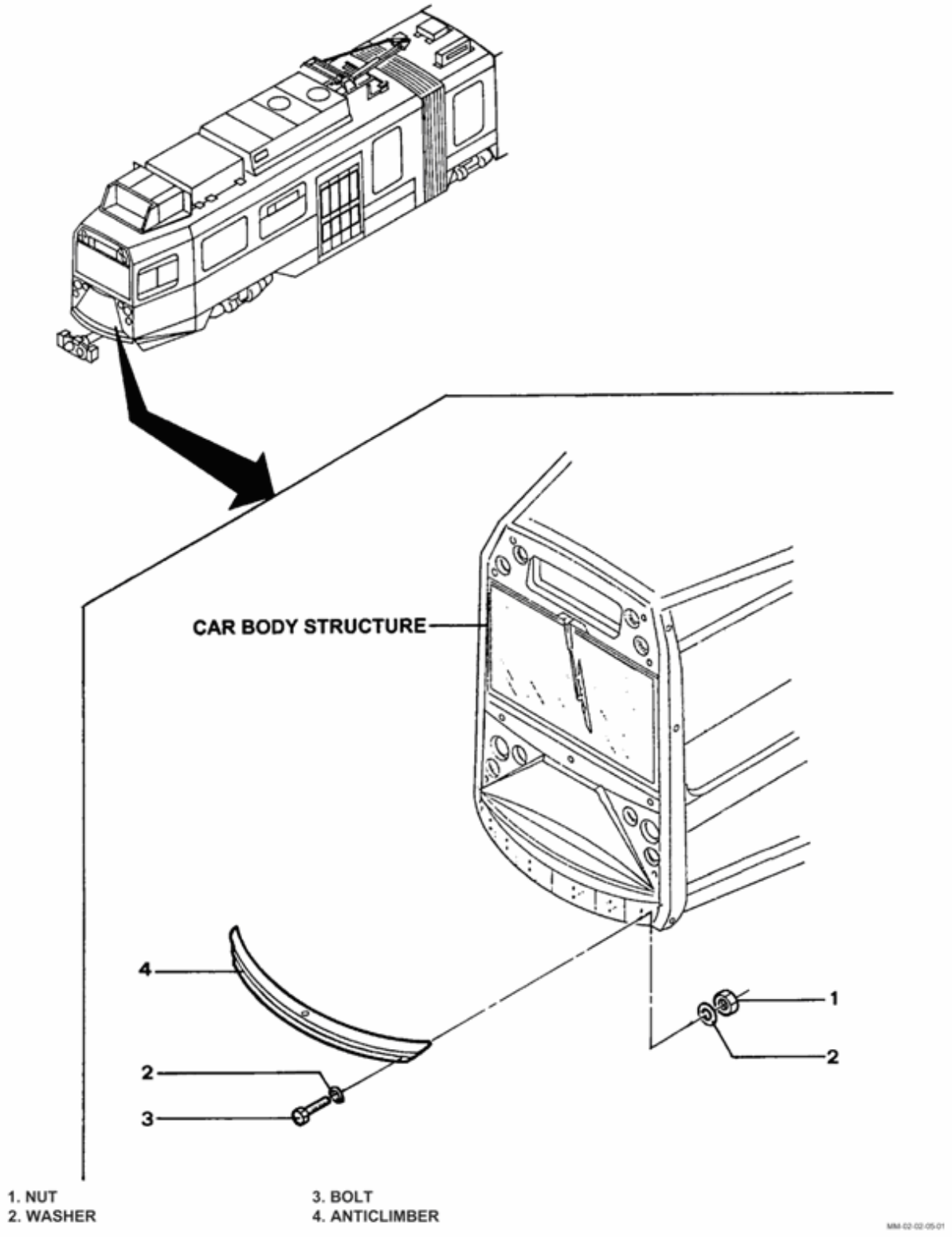


Figure 2-2.6 Anticlimber - Removal

b) Articulation Support Removal

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wood Blocks.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove the Articulation Support, proceed as follows (Refer to Figure 2-2.7):

WARNING:	**ARTICULATION SUPPORT WEIGHS 243 LB (110 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

NOTE: The following procedure should be performed with Trailer Truck or Articulation Pin removed. Following it is assumed that the Trailer Truck has been removed. For Trailer Truck or Articulation Pin Removal refer to Section 10

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Insert a suitable wood block(s) under the Articulation Support to support it in order to avoid unsafe condition after attaching hardware removal.
3. Remove nuts (6) and washers (5).
4. Remove bolts (2), washers (3, 4).
5. Remove Articulation Support (1).
6. Position Articulation Support (1) on a pallet to make easier its carring.

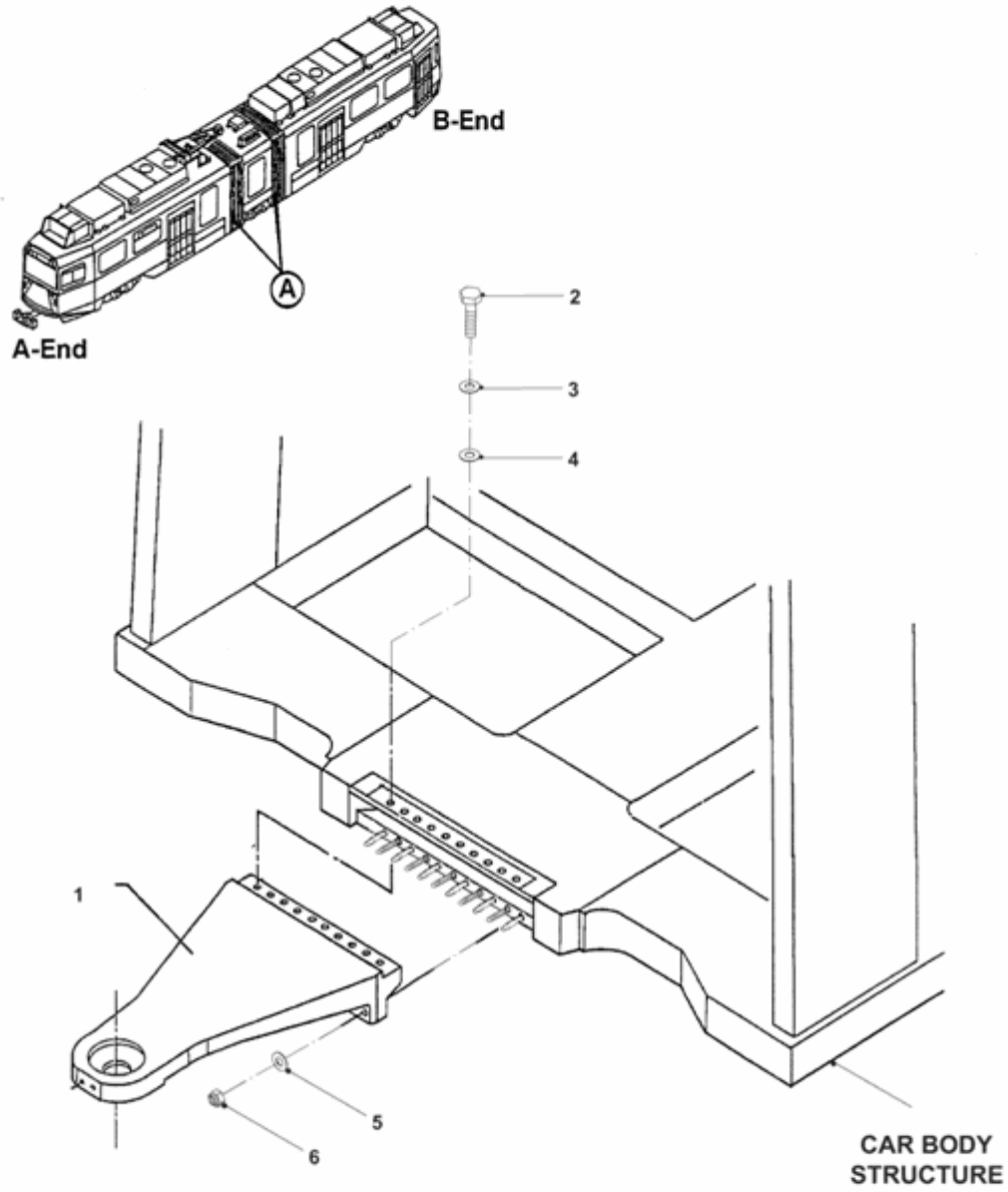


Figure 2-2.7 Articulation Support - Removal

2-2.1.e Cleaning/Painting

a) Cleaning

To Clean Main Underframe proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (as required) (Refer to Section 1, Table 1-9).
- **Procedure.**

  To clean Main Underframe and the equipment installed on, proceed as follows:
  1. Carry the vehicle in the washing area.
  2. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  3. Clean Main Underframe components using compressed air, cleaning rags and brush.There are no prohibition and/or restrictions regarding the use of high pressure washers, or steam cleaners in accordance with MBTA Regulations.
  4. Clean the surface and apply grease.

b) Painting

For Main Underframe Painting procedure, refer to para 2-2.e.

2-2.1.f Inspection

To Inspect Main Underframe proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect structures for cracks, dents or otherwise damages.
  4. Inspect vehicle systems equipment for correct installation.
  5. Inspect for oil/compressed air leakage.
  6. Inspect all tubes/pipings for damage, leakage and correct installation.
  7. Inspect Anticlimber for damages/deformation and correct installation.
  8. Inspect Articulation Support for damage/deformation loose or missing hardware. If found report to Supervisor.
  9. Inspect Articulation Support for presence of debris. If found report to Supervisor.
  10. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.1.g Repair

The Main Underframe is designed to have no structural damages during the normal vehicle's operating life.

For this reason, in normal service conditions, Main Underframe repair operations will be necessary only for railroad accident/damages.

When a structural damage is detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed and repair parameters and procedure established.

2-2.1.h Reassembly

The Main Underframe Components that require the installation are the following:

– Anticlimber Installation.
– Articulation Support Installation.

a) Anticlimber Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install the Anticlimber, proceed as follows (Refer to Figure 2-2.1):

WARNING:	**ANTICLIMBER WEIGHS 88 LB (40 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Position the Anticlimber (4).
3. Install bolts (3), washers (2) and nuts (1).
4. Tighten bolts (3) to **270 ft-lb (365 Nm)**.

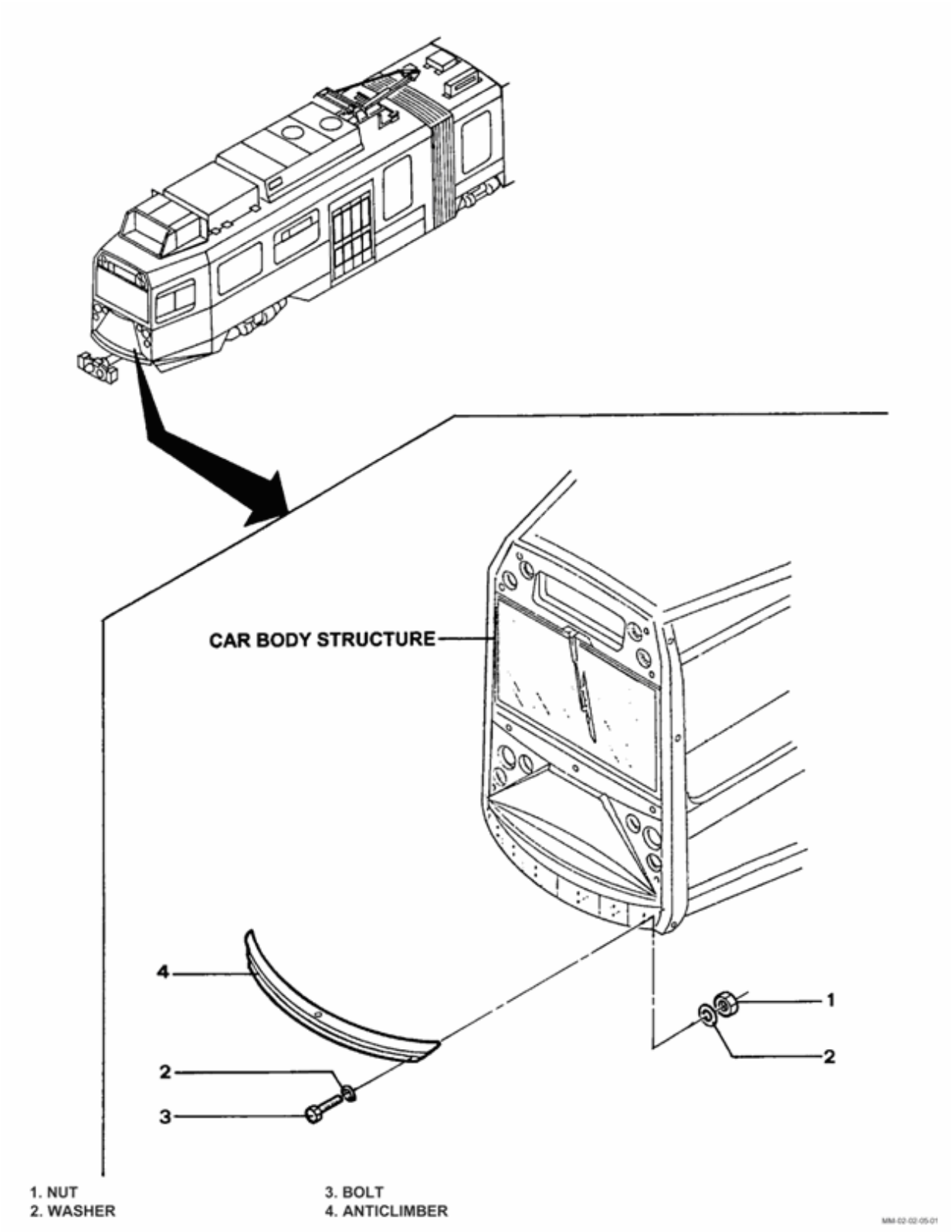


Figure 2-2.8 Anticlimber - Installation

b) Articulation Support Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Nut, Self-Locking, P/N R123106554, Q.ty 10.
- **Procedure.**

  To Install the Articulation Support, proceed as follows (Refer to Figure 2-2.9):

WARNING:	**ARTICULATION SUPPORT WEIGHS 243 LB (110 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

NOTE: The following procedure should be performed with Trailer Truck or Articulation Pin removed. Following it is assumed that the Trailer Truck has been removed. For Trailer Truck or Articulation Pin Removal refer to Section 10

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Position Articulation Support (1) in the related seat.
3. Install bolts (2), washers (3, 4). Do not tighten bolts (2).
4. Install new self-locking nuts (6) and washers (5).
5. Tighten nuts (6) to **488 ft-lb (660 Nm)**.
6. Tighten bolts (2) to **442 ft-lb (598 Nm)**.

2-2.1.i Adjustment/Test (Not Applicable)

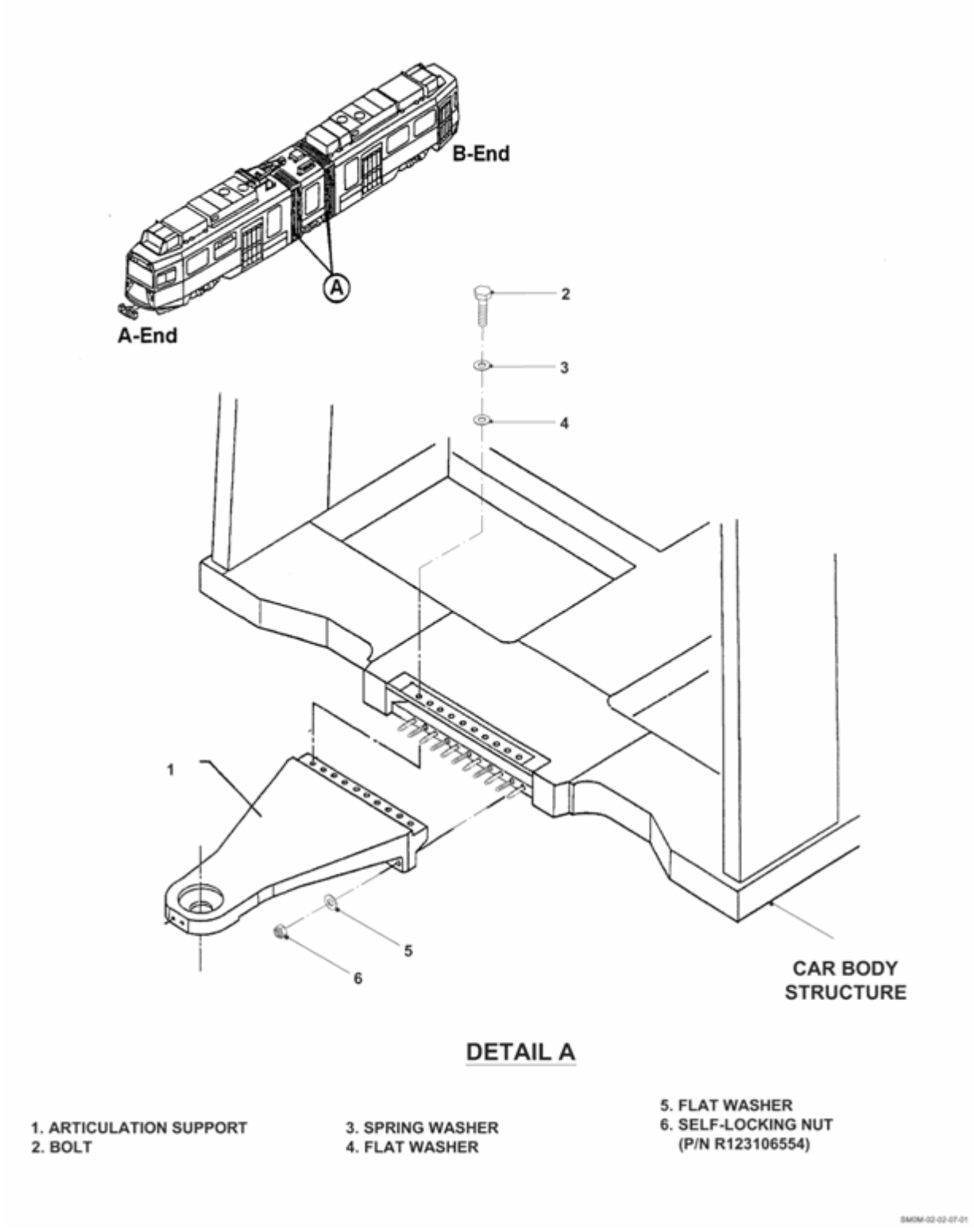


Figure 2-2.9 Articulation Support - Installation

2-2.2 End Frame

2-2.2.a Description and Theory of Operation

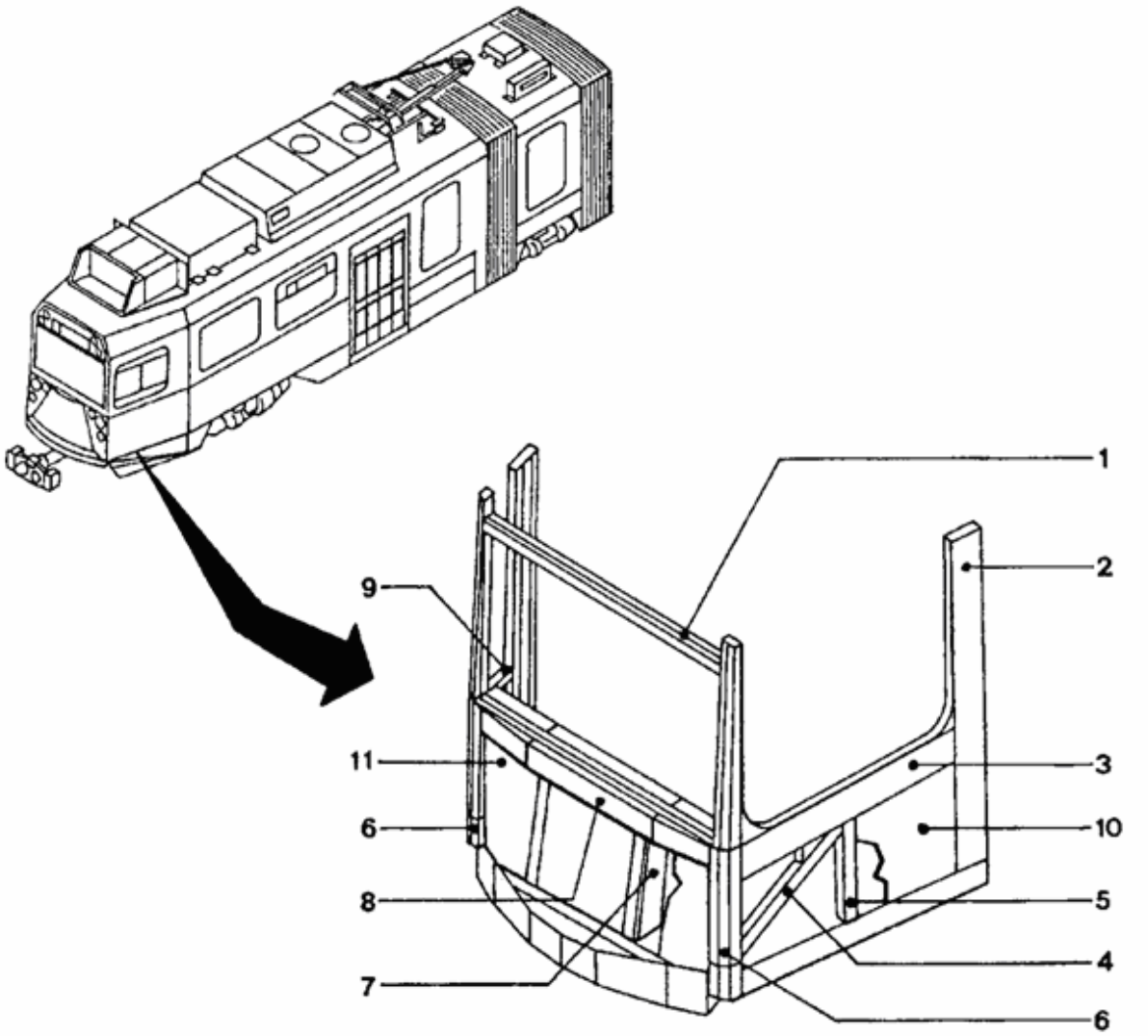
The End Frame of each section ("A" or "B") (Refer to Figure 2-2.10) consists of one Upper Cross Member (1), two Posts (2), one Side Rail (3), two Diagonal Profiles (4), two External Cover Sheets (10), one Front Belt Beam (8), one Tube (5), two front End Posts (6), three Front Panels (11) and one Tube (9). The Anticollision Vertical Posts (7) (Main Underframe Refer to Figure 2-2.5) are welded to the Front Belt Beam (8).

The Side Rails (3) and the Diagonal Profiles (4), mounted just under the Operator's Cab windows, transmit the collision forces partly to the Post Structure (First Door) (2) partly to the underframe. The Front Belt Beam (8), connecting the two Anticollision Vertical Posts (7), absorbs the transversal components of the collision forces.

The Front Panels are welded to structure, the External Cover Sheets are glued to structure. The End Frame components are made with CORTEN carbon steel, except the Anticollision Post, made with E 490 D carbon steel and the External Cover Sheets made with aluminum. The End Frame is capable of resisting without failure, normal operating leads and the specified collision and jacking loads.

The End Frame is designed to allow the installation of:

Lower Front Panel	Refer to para 2-2.6
Head, Tail and Trouble Lights	Refer to Section 10
Windshield Wiper	Refer to para 2-4.3
Wiper Washer Fluid Service Filler	Refer to para 2-4.3
Windshield	Refer to para 2-2.5.2
Op. Cab Window	Refer to para 2-2.5.1
External/Internal Rear-View Mirrors	Refer to para 2-4.4
Destination Sign	Refer to Section 12



1. UPPER CROSS MEMBER
2. POSTS
3. SIDE RAIL
4. DIAGONAL PROFILE
5. TUBE
6. FRONT END POST
7. ANTICOLLISION POSTS (MAIN UNDERFRAME)
8. FRONT BELT BEAM
9. TUBE
10. EXTERNAL COVER SHEET
11. FRONT PANELS

Figure 2-2.10 End Frame - Components

2-2.2.b Specific Safety Precautions

WARNING:	**BEFORE PERFORMING MAIN UNDERFRAME MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.** **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-2.2.c Fault Isolation

The End Frame is designed to have no structural damages during the normal vehicle's operating life. For this reason, in normal service conditions, End Frame repair will be necessary only for railroad accident/damages. When a structural damage is detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed and repair parameters and procedure established.

2-2.2.d Disassembly (Not Applicable)

2-2.2.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean End Frame and the equipment installed on, proceed as follows:

  1. Carry the vehicle in the washing area.

2. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
3. Clean End Frame using mild deteregent diluted in water and clean cloth; rinse with clean water. There are no prohibition and/or restrictions regarding the use of high pressure washers, or steam cleaners in accordance with MBTA Regulations.

NOTE: For vehicle as a whole cleaning, refer to para 2-2.c.

b) Painting

For End Frame Painting procedure, refer to para 2-2.e.

2-2.2.f Inspection

To Inspect End Frame and the equipment installed on proceed as follows:

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect structures for cracks, dents or otherwise damages.
  3. Inspect paint for damage/corrosion.
  4. Inspect vehicle systems equipment for correct installation.
  5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.2.g Repair

The End Frame Structural Components are designed to have no structural damages during the normal vehicle's operating life.
For this reason, in normal service conditions, End Frame repair operations will be necessary only for railroad accident/damages.

When a structural damage is detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed and repair parameters and procedure established.

For End Frame External Cover Sheets Repair procedure, refer to para 2-2.3.g.

2-2.2.h Reassembly (Not Applicable)

2-2.2.i Adjustment/Test (Not Applicable)

2-2.3 Sidewalls

2-2.3.a Description and Theory of Operation

Each vehicle section structure ("A" and "B") is provided with two sidewalls: one with two passenger doors and one with only one passenger door (Refer to Figure 2-2.11).

The structure of the sidewall with two passenger doors consist of three door vertical posts (4) and one window vertical post (5).

The structure of the sidewall with one passenger door consist of two door vertical posts (4) and one window vertical post (5).

The vertical posts (2, 4, 5, 8) are welded in the lower part to the side sills (main underframe), and in the upper part, to the cantrails of the roof.

The window stringers (6) and the diagonal elements (3), as longitudinal stiffenings, are welded to the door/window vertical posts. The external cover sheets (7) are glued to the underframe side sills, window stringers, and to the vertical posts.

The sidewall components are made with CORTEN carbon steel, except the external cover sheets, made of aluminum.

The vertical post (2) located on LH side next to the Articulation Section is designed to allow the installation of six folding steps (1) to enable the maintenance personnel to climb onto the roof. A square key latch is provided for each of the two lower steps to lock them in closed position when not in use. The steps have a non-skid surface.

The Sidewalls are designed to allow the installation of:

External Side Panels	Refer to para 2-2.6
Doors	Refer to Section 8
Sand Service Filler	Refer to Section 16
Windows	Refer to para 2-2.5.1
Folding Steps	Refer to para 2-2.3
Communication Equipment	Refer to Section 11
Doors Control Components and Lights	Refer to Section 8
Trouble Lights	Refer to Section 10

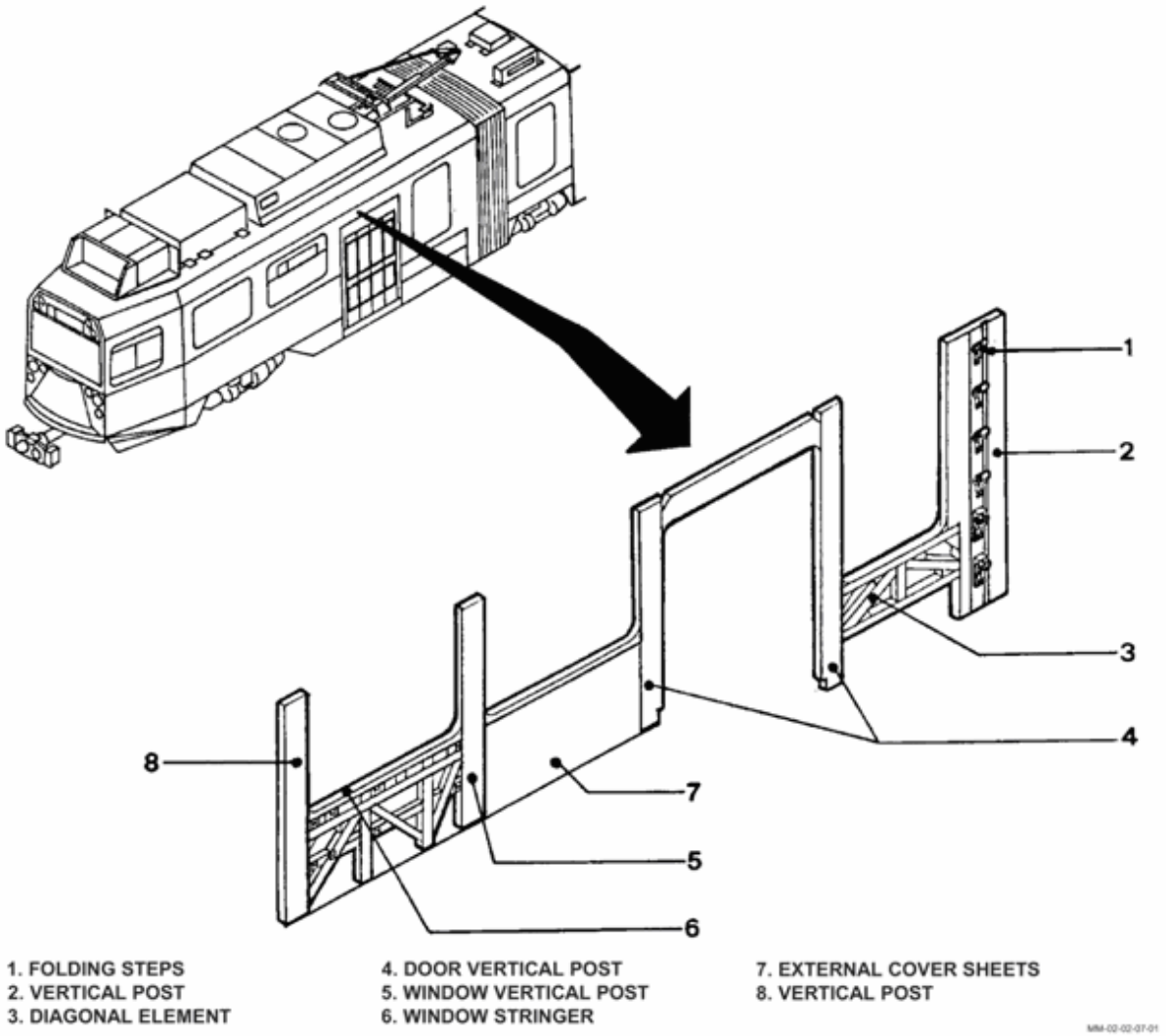


Figure 2-2.11 Sidewall - Components

2-2.3.b Specific Safety Precautions

WARNING:	**BEFORE PERFORMING MAIN UNDERFRAME MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.** **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-2.3.c Fault Isolation

The Sidewalls is designed to have no structural damages during the normal vehicle's operating life.

For this reason, in normal service conditions, Sidewall repair operations will be necessary only for railroad accident/damages.

When a structural damage is detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed and repair parameters and procedure established.

For External Cover Sheet Repair refer to para 2-2.3.g.

2-2.3.d Disassembly

The Sidewall Components are joined by welding. The only components that require the removal are the following:

– Folding Steps Removal.

a) Folding Steps

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Folding Step and related Key Latch, proceed as follows (Refer to Figure 2-2.12):

  NOTE: Only the first two steps (Lower Side) are provided with square key latch.

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using the Maintenance Key, unlock the step to be removed.
  3. Loosen and remove screws (6), washers (4, 5).
  4. Remove step (3) and latch (2) from sidewall.

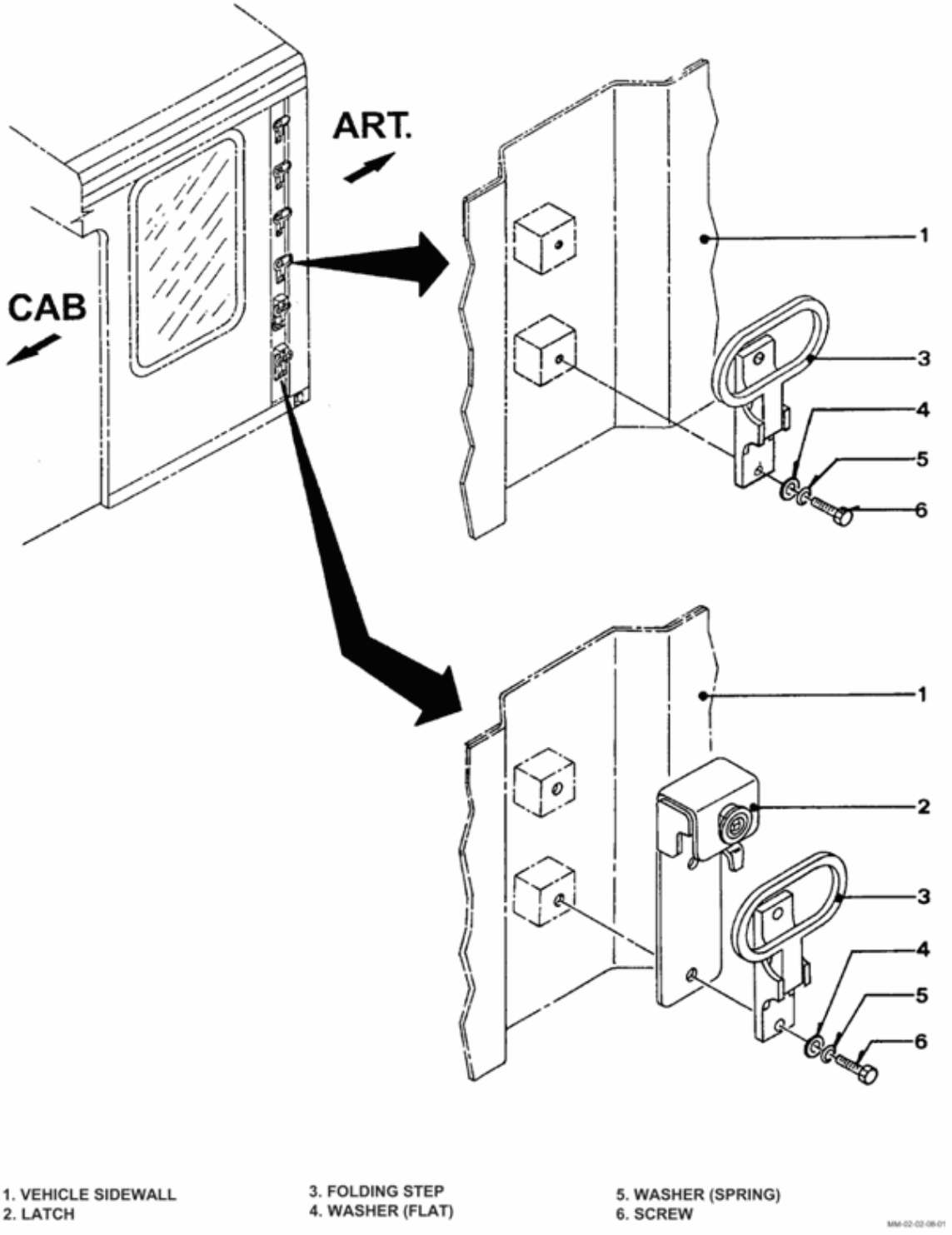


Figure 2-2.12 Folding Steps – Removal

2-2.3.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Sidewalls and the equipment installed on, proceed as follows:
  1. Carry the vehicle in the washing area.
  2. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  3. Clean sidewall using mild deteregent diluted in water and clean cloth; rinse with clean water. There are no prohibition and/or restrictions regarding the use of high pressure washers, or steam cleaners in accordance with MBTA Regulations.

  NOTE: For vehicle as a whole cleaning refer to para 2-2.e a).

b) Painting

- **Sidewalls Painting**

  For Sidewalls Painting procedure, refer to para 2-2.e b).

- **External Steps Painting (Not Applicable).**

2-2.3.f Inspection

To Inspect each Sidewall, proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect structures for cracks, dents or otherwise damages.
  4. Inspect vehicle systems equipment for correct installation.
  5. Inspect Folding Steps for damages/deformations.
  6. Using the Maintenance Key verify correct operation of the step Key Latches.
  7. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.3.g Repair

The Sidewalls Repair procedure consists of the following:

1. Sidewalls- External Cover Sheets Repair.
   a. Structural members not damaged.
   b. Structural members damaged.
   c. Cutting out damaged areas.
   d. Small Repairs.
2. Thermal / Acoustical Insulation Replacing.

CAUTION: WHEN A STRUCTURAL DAMAGE IS DETECTED, THE REPAIR MAY NOT BE MADE UNTIL A CAR-BUILDER ENGINEERING DPT. EVALUATION IS COMPLETED AND REPAIR PARAMETERS AND PROCEDURE ESTABLISHED.

a) Sidewalls- External Cover Sheets Repair

To repair the Sidewalls – External Cover Sheet, proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure**
  1. Structural members not damaged:
     a. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
     b. Cut-out deformed or damaged area of body side panel. Refer to following step 3.
     c. Secure new side panels using T.I.G. welding.

        NOTE: Before installation of side panels, apply DOW CORNING SEALER sealant on mating surface for water tightness.

     d. Perform the painting procedure. Refer to para 2-2.e.

  2. Structural members damaged:
     a. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
     b. Remove windows, liners and insulation, pipes, wirings, and equipment before cutting the external panels.
     c. Support remaining structure so as to prevent distortion and permanent damage.
     d. Cut out deformed or damaged area of body side panel. Refer to the following step 3.
     e. Cut out deformed or damaged area of damaged member(s).
     f. Fabricate new member(s).
     g. Secure new side panels using T.I.G. welding machine.

        NOTE: Before installation of side panels, apply DOW CORNING SEALER sealant on mating surface for water tightness.

     h. Perform the painting procedure. Refer to para 2-2.e.

3. Cutting out damaged areas:
   a. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   b. When cutting external sheets using the plasma cutter or grinder cutters, remove interior panels, liners and insulation material placed just behind the external sheet to be cut, in order to prevent possible burning or cutting.
   c. Remove wiring and/or equipment just behind the external sheet, or insert heat protection boards between the external sheet and wiring and/or equipment so as to protect those materials from the heat produced by plasma cutting.
   d. When cutting grinders are used, care should be taken that interior stainless steel parts are not damaged.
   e. When drilling out weld nuggets, care should be taken that wiring and/or equipment just behind the external sheet is not damaged.
   f. To separate spot welded parts, a hard drill is required. Drill a small leading hole first and then drill a full-diameter, weld nugget removing hole. Use a bit material suitable for austenitic stainless steel. The drilled-in depth should be kept equal to the thickness of the external sheet. The configuration of the point of full-diameter, weld nugget removing drill is to be ground finished. The rotating speed should be approximately 450 r.p.m.
   g. Remove the surface incrustations using a surface grinder.

4. Small Repairs:

   The following information regarding external surface repairs are intended as a guide during accomplishment of repairs. It may be found that external surface damages may require a combination of the suggested repair procedures, and that a single procedure will not be sufficient. The Manufacturer should be informed of damages exceeding the allowable limits to facilitate issuing recommended repair procedures.

   a. Dents

      To repair small dents, perform the following procedure:

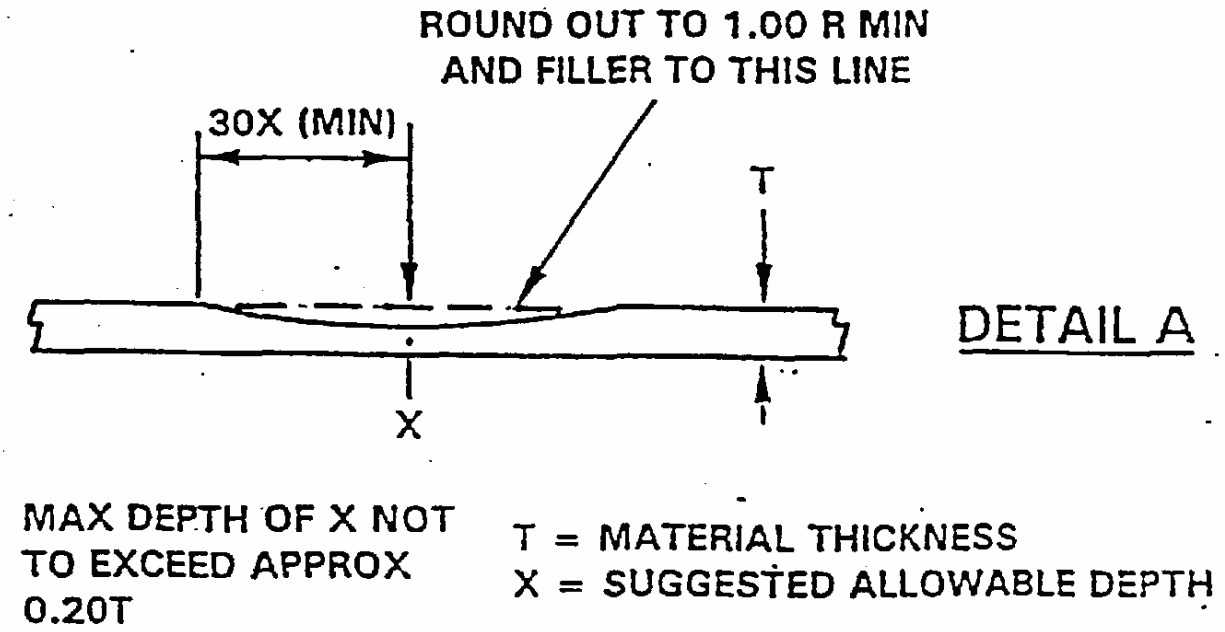
      (1) Gain access to the back face of the damaged sheet.
      (2) Planish the back face of the sheet.
      (3) Perform external surface brushing using a rotating brush grit 80.
      (4) Perform surfacing procedure.
      (5) Perform painting procedure. Refer to para 2-2.e.

   b. Scratches or Nicks

      To repair scratches or nicks, perform the following procedure:

      (1) Scratches or nicks that do not penetrate beyond the paint coats do not require repair.

(2) Those that penetrate beyond the paint coats to the depth as shown below can be surfaced and painted.
(3) Those that penetrate beyond the depth shown in Detail A must be repaired as a cracks.

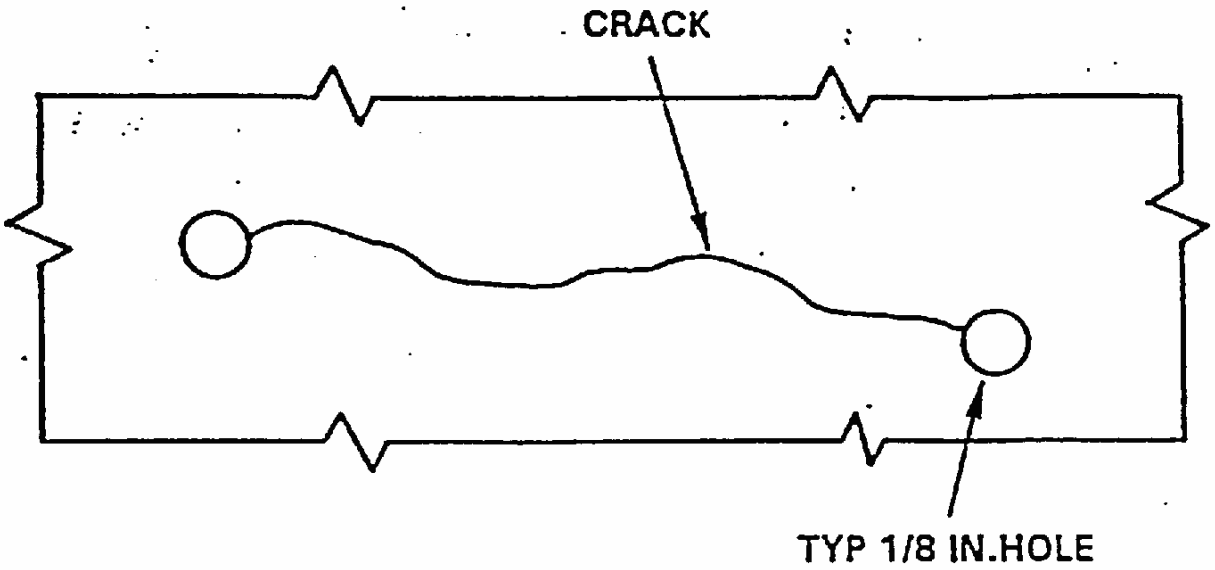


c. Cracks.

To repair small cracks, perform the following procedure:

CAUTION: WHEN REPAIRING THE VEHICLE EXTERNAL SURFACE, CONSIDER THE EFFECTS THAT THE REPAIR WILL HAVE ON THE WATERTIGHT INTEGRITY OF THE VEHICLE, AS WELL AS THE APPEARANCE. EXTERNAL PATCHING WOULD BE UNSIGHTLY AND CANNOT BE ACCEPTABLE.

(1) Drill 1/8 in. hole at end of the crack.



DETAIL B

(2) Perform the repair operation by plugging with a countersunk blind rivet and sealing with any cold bonding agent.
(3) Perform the surface treatment before proceeding to the painting procedure.
(4) Perform the painting procedure. Refer to para 2-2.e.

5. Drilling of Stainless Steel:

The drilling of stainless steel presents some additional problems not usually associated with carbon steel. Drills with split points are usually used for drilling stainless steel. The drills are prepared with different cutting angles than those used with carbon steel. Drill point tips used are ground with 135 to 140 degree angle (included), and 8 to 15 degree lip clearance. Drill speeds used for drilling stainless steel should be closely controlled to prevent work hardening of the metal. Lubrication/coolant is very important in drilling stainless steel.

CAUTION: WHEN ANY SERIOUS DAMAGE IS DETECTED APART FROM MENTIONED ABOVE REFER TO ENGINEERING DEPARTMENT REPAIR PARAMETERS & PROCEDURE TO ENSURE CAR STRUCTURAL INTEGRITY.

NOTE: Depending upon the severity of the damage do the following

1. Visual inspection
2. Liquid penetration inspection
3. Magnetic flux inspection
4. Radiography

b) Thermal / Acoustical Insulation Replacing:

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material.
   - Glue (DOW CORNING Q3 3525 type).
   - Glue Remover (commercial).
   - Thermal Insulation (Refer to IPL Section 2).

- **Procedure**

To replace the Thermal / Acoustical Insulation, proceed as follows (Refer to Figure 2-2.13):

NOTE: It is assumed that the involved interior liners / panels are removed before performing the thermal / acoustical insulation (refer to para 2-3.2.d).

1. Locate the thermal insulation to be removed.
2. Mark the repaired area (Cutting Line).

NOTE: The repaired area should be marked at a minimum distance of 4 inches (101.6 mm) from the damaged area as shown in the figure.

3. Cut the thermal insulation following accurately the marking line.
4. Strip / scrape the thermal insulation (inside the cutting line).
5. Remove a glue joints from skin, using a glue remover.
6. Clean the sidewall internal skin using degreaser / solvent (Refer Section 1, Table 1-9).

CAUTION: BEFORE THERMAL / ACOUSTICAL INSULATION INSTALLATION, PERFORM THE WATER TIGHTNESS TEST (REFER TO PARA 2-2.3.I) ON THE INVOLVED AREA.

7. Prepare thermal insulation sheet to replace the repaired area.

CAUTION: FOLLOWS STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

8. Apply glue joints (using DOW CORNING Q3 3525 Glue type) on the involved area as shown in the figure.
9. Position new thermal insulation in the repaired area.

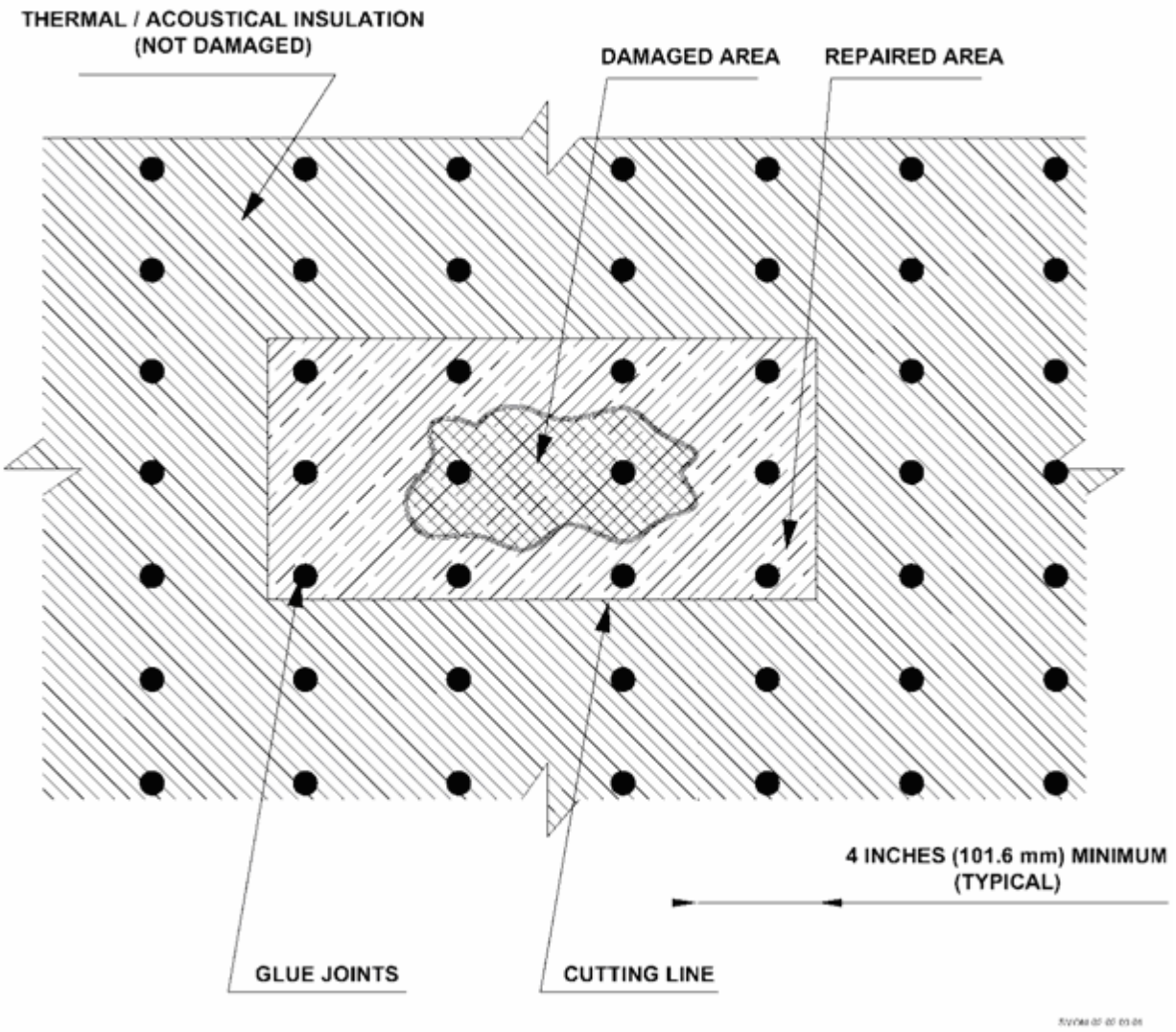


Figure 2-2.13 Thermal / Acoustical Insulation Replacing Typical

c) Folding Step Repair.

Damaged Folding Step should be replaced. Repair is not applicable.

2-2.3.h Reassembly

a) Sidewalls (Not Applicable)

b) Folding Steps

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Folding Step and related Key Latch, proceed as follows (Refer to Figure 2-2.14):

  NOTE: Only the first two steps (Lower Side) are provided with square key latch.

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position latch (2) and step (3) as shown in the figure.
  3. Install screw (6) and washers (5, 4).
  4. Tighten screws (6) to **14 ft-lb (19 Nm)**.
  5. Using the Maintenance Key lock fold steps by closing the related latch (as required).

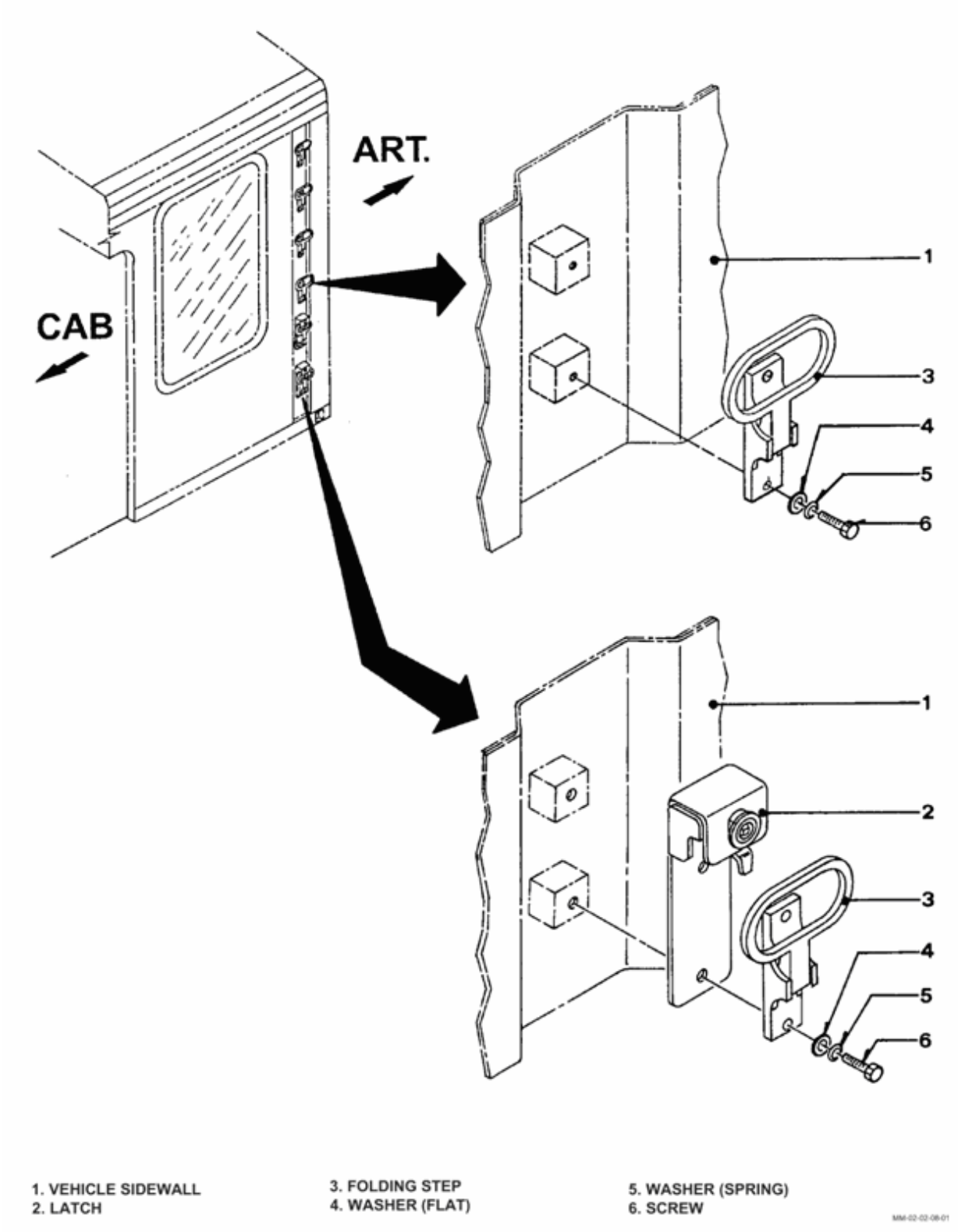


Figure 2-2.14 Folding Steps – Removal

2-2.3.i Adjustment/Test

a) Adjustment (Not Applicable)

b) Water Tightness Test

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Water Tightness Test proceed as follows:

  1. Move the vehicle into the washing area or designed area to perform Water Tightness Test.
  2. Set the vehicle in safety conditions as follows:
     a. Remove electrical power by lowering the pantograph.
     b. Switch OFF the Battery Circuit Breaker (CB 3Q03 – Battery Box).
  3. Check/close doors and cab windows.
  4. Spray on the vehicle a costant water jet, through nozzles located at a distance no greater than 3 ft (915 mm), for a minimum 10 minutes.

     NOTE: Flow rate shall be greater than 0.625 gallons per minute per square foot (25.4 liters per minute per square meter) and the speed of the water at the nozzle shall be greater than 150 ft per second (45.72 m per second).

  5. Check for water leakage from the roof, side doors, sealing of windows, air ducts and bellows, staying inside the vehicle.
  6. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.4 Roof

2-2.4.a Description and Theory of Operation

The Roof is a structural assembly designed to have the required stress resistance and to support the installed equipment. The roof consists of (Refer to Figure Figure 2-2.15): Roof Side Sill (1), Roof Crossbeams (2), Roof Top Sheet (3) and various components (to support the different equipment system) welded together. All joints are watertight. The roof components are made with rolled and/or formed sheets and are designed to supports the system equipment installed on. The roof is also designed to allow its full cleaning without damage when passing the vehicle through high velocity jet type or rotary brush type automatic car washer. Equipment wells have adequate drainage for the worst case environmental conditions. Steel brackets are welded to the roof to support roof mounted equipment. The roof equipment are bolted to these brackets.

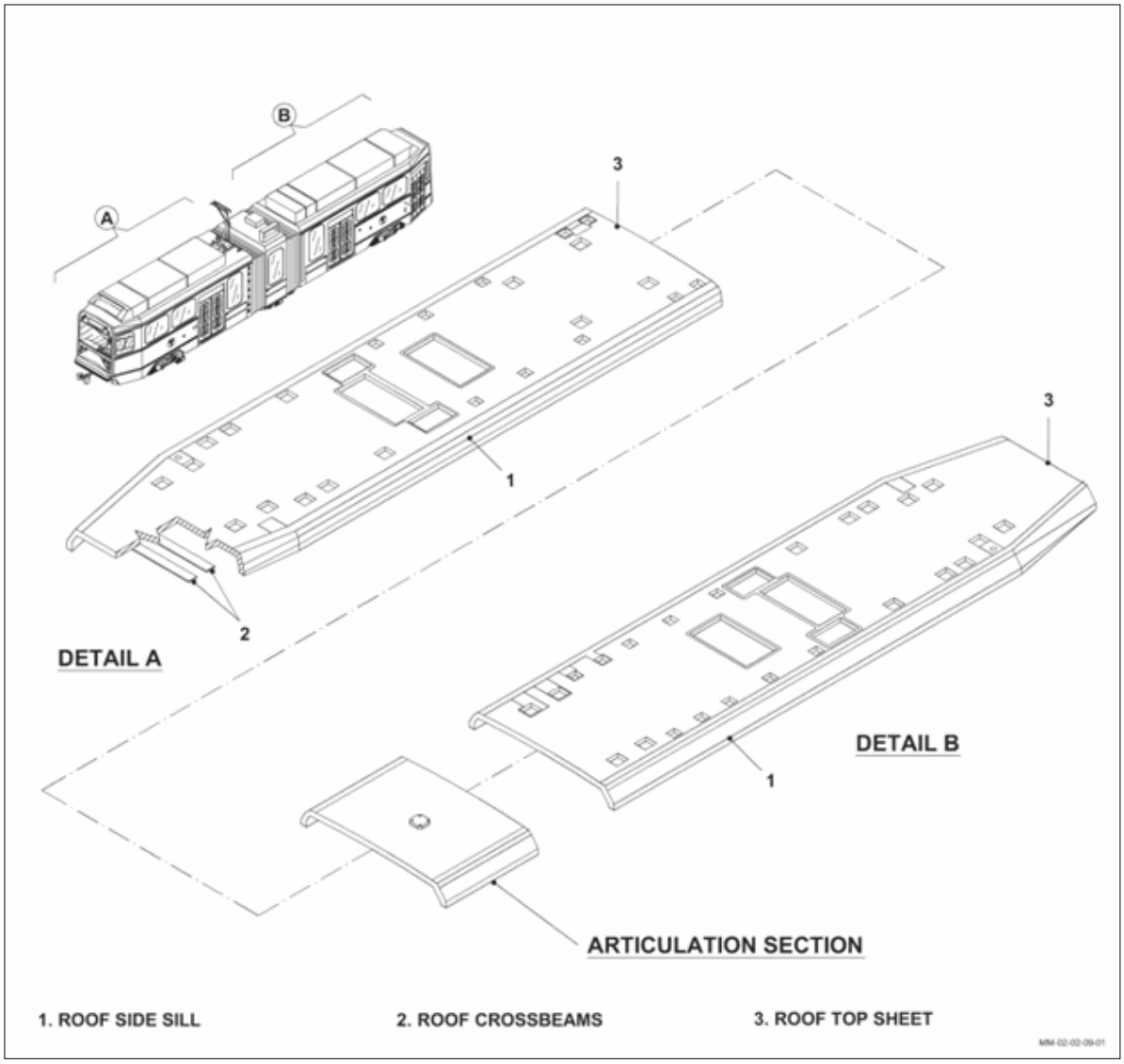


Figure 2-2.15 Roof - Components

The roof equipment are reinforced around openings for air inlets, piping and wiring. All reinforcement are welded steel. Reinforcements on the roof are made watertight by welding. Around the pantograph mounting and other roof-mounted equipment an anti-skid walking surface and an electrically insulated area are provided. The Antiskid surfaces consist of a mat of anti slip material 3M Brand Safety walk – General Purpose, (black) with a side coated with a pressure – sensitive adhesive protected by a removable liner.

Once installed, the mat edges are sealed by means of 3M Scotch - Grip 1236/847 Edge Sealer.

For Roof mounted cable trays refer section 2-3.8

On "A" Body Section roof is installed the following equipment:

-- OUTSIDE	HVAC Package	Refer to Section 5
	Pantograph	Refer to Section 17
	Lightning Arrester	Refer to Section 6
	Traction Inverter	Refer to Section 7
	Dynamic Brake Control	Refer to Section 9
	Traction Inverter Fuse "A"	Refer to Section 7
	Line Fuse Auxiliary	Refer to Section 7
	Traction Inverter Fuse "B"	Refer to Section 7
-- INSIDE	Air/Lights Fixtures	Refer to Section 6
	Communication System Components	Refer to Section 12
	Doors Indicators	Refer to Section 4
	Interiors	Refer to para 2-3
	Side Destination Sign	Refer to Section 13

On "B" Body Section roof is installed the following equipment:

-- OUTSIDE	HVAC Package	Refer to Section 9
	Auxiliary Power Supply	Refer to Section 7
	Air Supply Unit	Refer to Section 11
	Traction Inverter	Refer to Section 7
	Radio Antenna	Refer to Section 12
-- INSIDE	Air/Lights Fixtures	Refer to Section 6
	Communication System Components	Refer to Section 12
	Doors Indicators	Refer to Section 4
	Interiors	Refer to para 2-3
	Side Destination Sign	Refer to Section 13

On Articulation Section roof is installed the following equipment:

-- OUTSIDE	Test Trolley Aux Box	Refer to Section 7
	High Voltage Circuit Breaker	Refer to Section 7
	Negative Junction Box	Refer to Section 7
-- INSIDE	Brake Logic Truck	Refer to Section 9

2-2.4.b Specific Safety Precautions

WARNING: **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

The safety hazard analysis requires that • The pantograph be grounded and secured during any work that is to be performed on the roof of the car. These warnings are not included anywhere in this manual and must be added in all sections where roof activities are to take place

2-2.4.c Fault Isolation

The Roof is designed to have no structural stress during the vehicle's operating life. For this reason, in normal service conditions, Roof repair will be necessary only for railroad accidents/damages. When a structural damage is diagnosed/detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed, and repair parameters and procedures established.

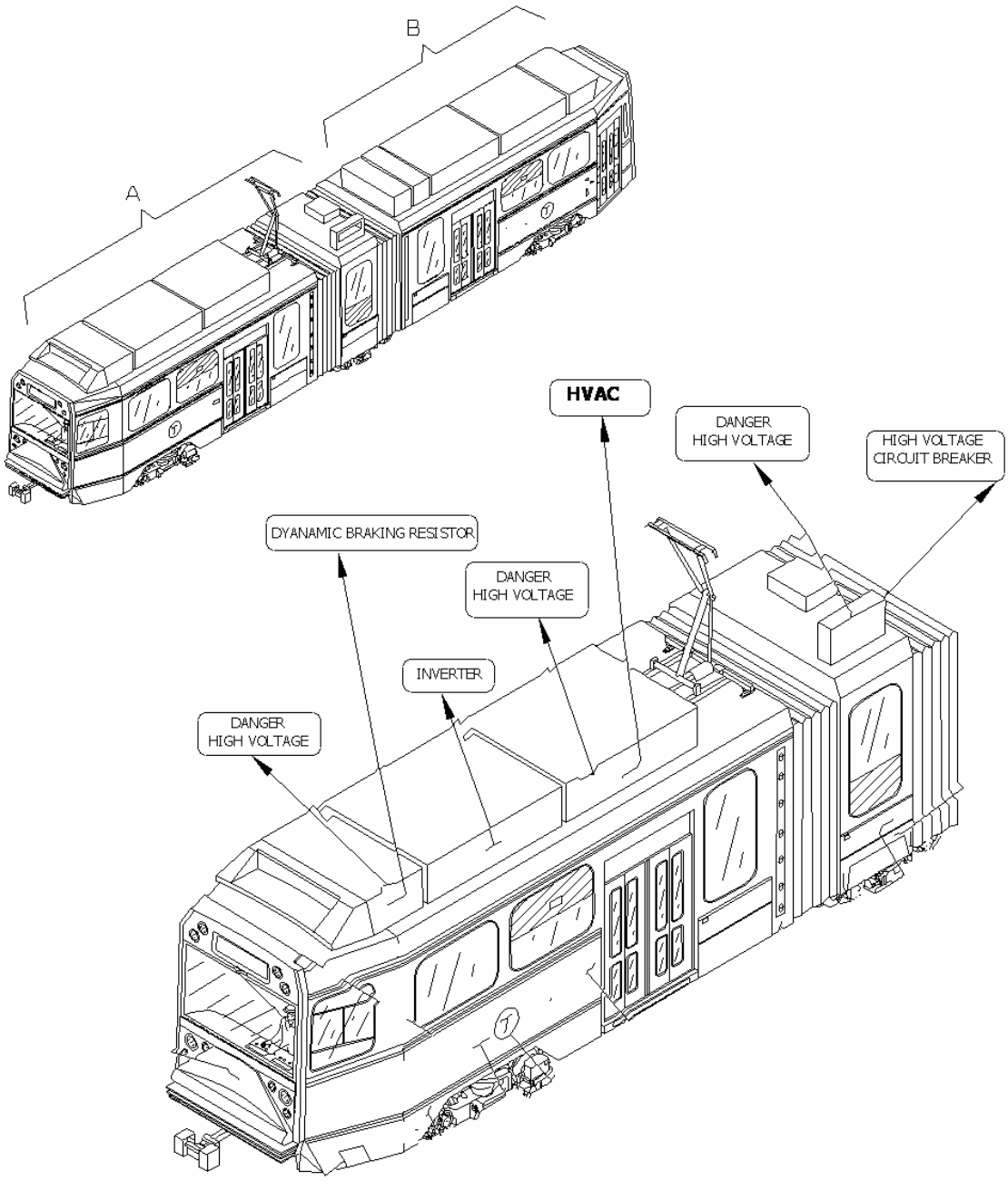


Figure 2-2.16 Roof – Equipments and Warning Labels (Sheet 1 of 4)

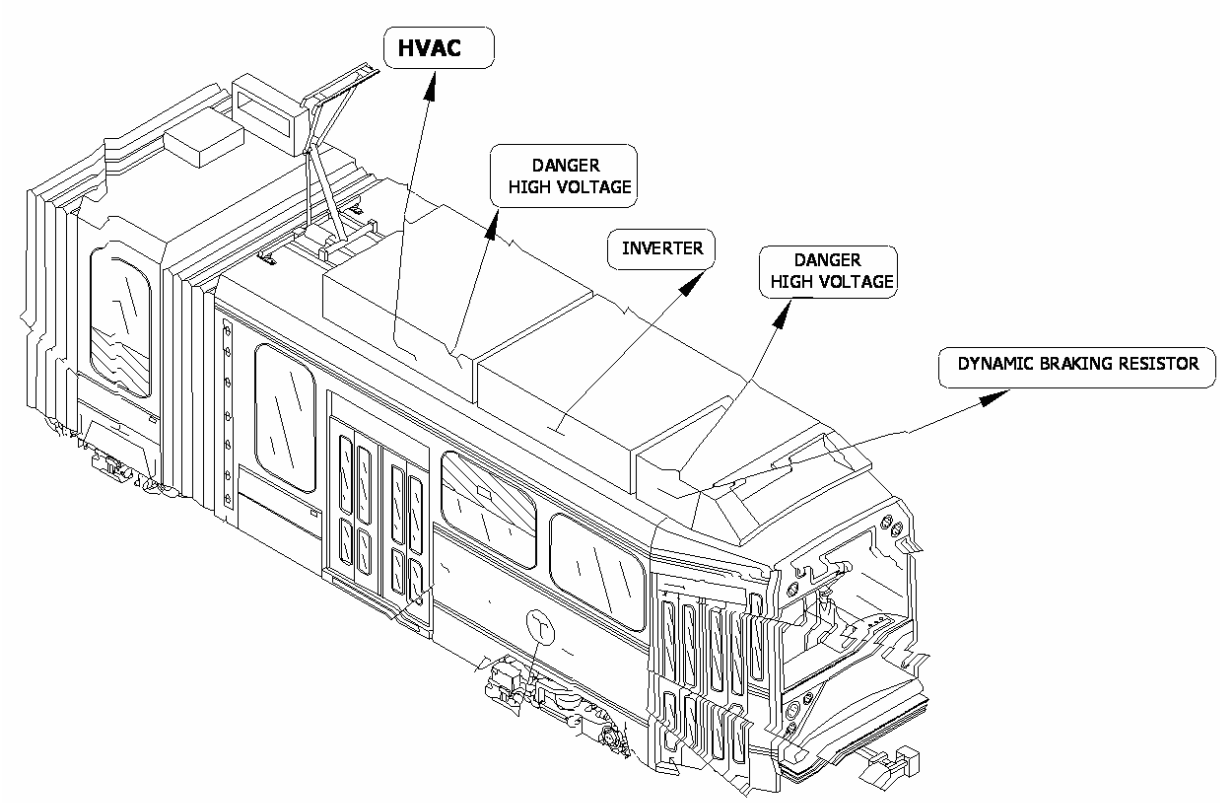


Figure 2-2.16 Roof – Equipments and Warning Labels (Sheet 2 of 4)

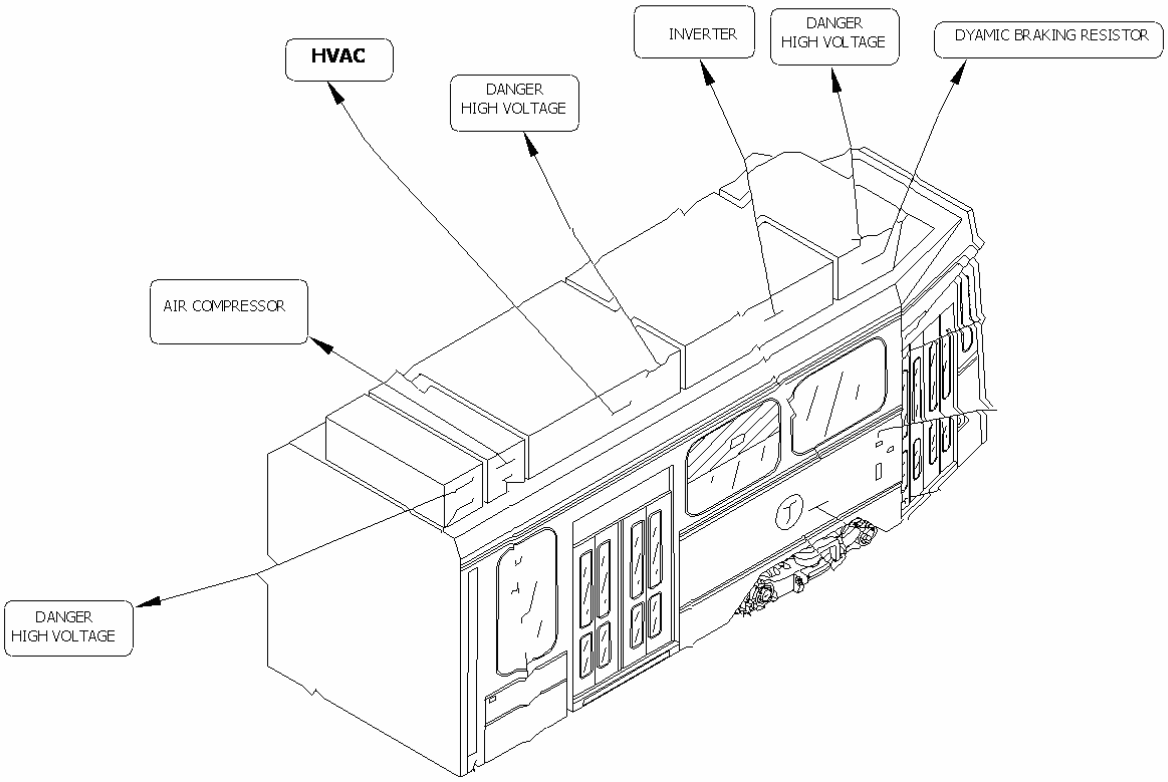


Figure 2-2.16 Roof – Equipments and Warning Labels (Sheet 3 of 4)

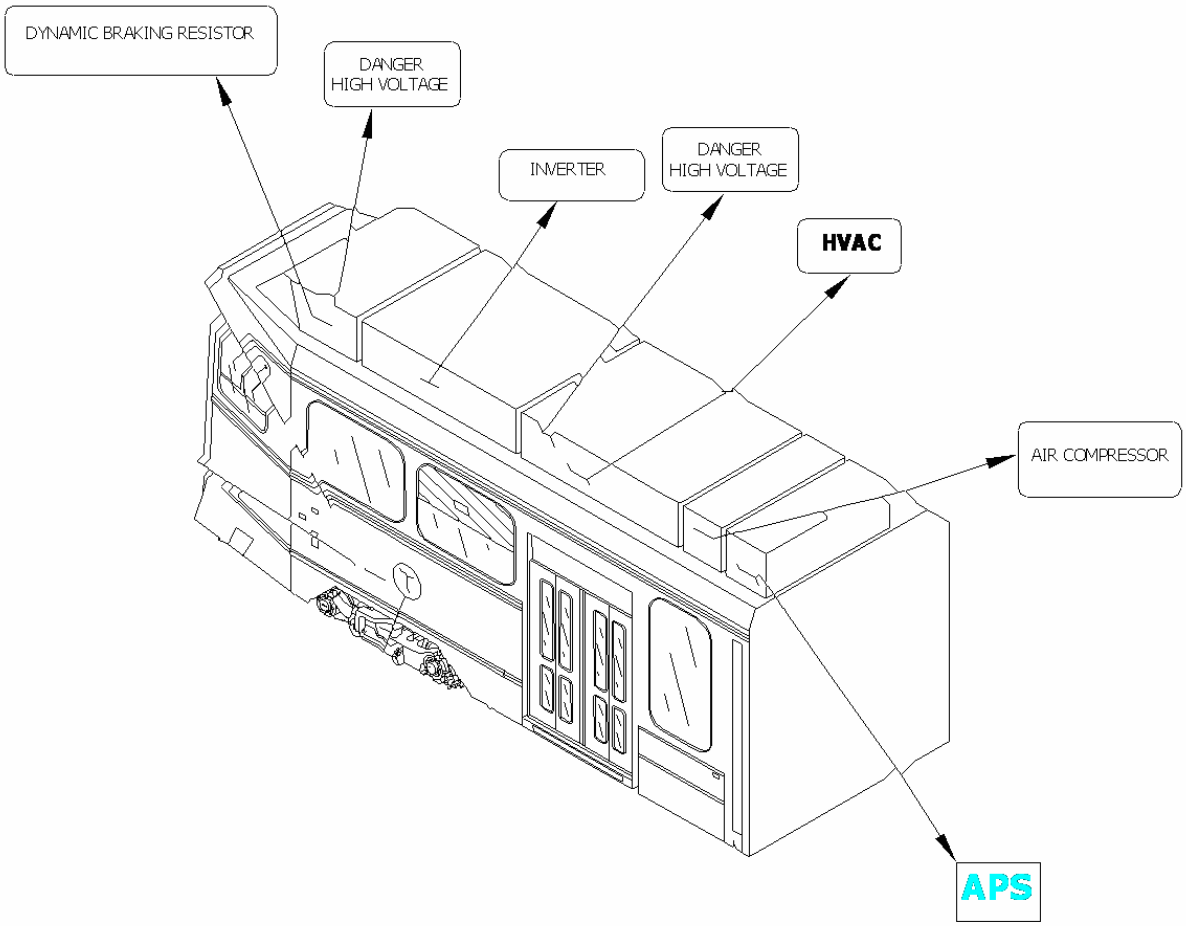


Figure 2-2.16 Roof – Equipments and Warning Labels (Sheet 4 of 4)

2-2.4.d Disassembly (Not Applicable)

2-2.4.e Cleaning/Painting

a) Cleaning

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).

- **Procedure.**

  To Clean Roof and the equipment installed on, proceed as follows:

> **WARNING:** **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**
> - **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
> - **GROUND AND SECURE THE PANTOGRAPH DURING THE CLEANING PROCEDURE.**
> - **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
> - **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
> - **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
>
> **WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".**

1. Carry the vehicle in the washing area.
2. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
3. Clean roof and equipment installed on, using vacuum cleaner, compressed air and cleaning rags.

4. If necessary use mild deteregent diluted in water and clean cloth; rinse with clean water. There are no prohibition and/or restrictions regarding the use of high pressure washer or steam cleaners in accordance with MBTA Regulations.
5. Remove debris (as leaf accumulation, subway tunnel dust) from roof gutters/equipment drainage piping. If necessary use a pig (a brush to be pulled and pushed through the pipe) to remove debris first and then blow out piping with compressed air / high pressure steam cleaner and use applicable disinfectant products as "KON-TROLE CONDENSATE DRAIN PAN CLEAR".
6. Cleaning Results must be recorded on Defect Report Cards to allow the planning of (Season) Maintenance Operations.

b) Painting

For Roof Painting procedure, refer to para 2-2.e.

2-2.4.f Inspection

- **Reference Information.**
  1. Tools / Equipment.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Roof and the equipment installed on, proceed as follows:

> **<u>WARNING:</u>** **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**
> - **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
> - **GROUND AND SECURE THE PANTOGRAPH DURING THE INSPECTION PROCEDURE.**
> - **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
> - **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
> - **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
>
> **WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: <u>PEOPLE WORKING</u> ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
2. Inspect paint for damaged/corroded.
3. Inspect structures for cracks, dents or otherwise damages.
4. Inspect vehicle systems equipment for correct installation.
5. Inspect Antiskid Roof Mat for damage / deformation, sign of breakaway / bubbles or wrinkles.
   If found report to Supervisor before perform the Repair (Refer to para 2-2.4.g b)).
6. Inspect Antiskid Mat Edge Sealing Bead:
   if found report to Supervisor before perform the Repair (Refer to para 2-2.4.g c)).
7. Inspect Cable Trays for damage / loose or missing hardware.
8. Inspect (Cable) Trays Cables Protection Gaskets for damage / loose. Apply a light coat of Vaseline gel onto each Cables Protection Gaskets to protect it from Air / Road / Subway Tunnel contamination (as metallic dust).
9. Inspect cable connectors for proper conditions and installation.
10. Inspect equipment labels installation for damage / missing.
11. Inspect HVAC roof duct gaskets and cable penetrations for damage / deformations. Refer to Section 5, para 5-2.1.f for duct gaskets detailed maintenance.
12. Inspect for debris obstruction in the roof gutters / equipment piping drainage. If found remove it (refer to previous Cleanig procedure, steps 5 and 6).
13. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.4.g Repair

a) Roof Structure

The Roof is designed to have no structural stress during the vehicle's operating life. For this reason, in normal service conditions, Roof repair will be necessary only for railroad accidents/damages. When a structural damage is diagnosed/detected, the repair may not be made until a Car-Builder Engineering Dpt. evaluation is completed, and repair parameters and procedures established.

b) Antiskid Mat

Following is provided the procedure to repair Roof Antiskid Mat on local /limited areas where bubbles / wrinkles are found.

- **Reference Information.**

1. Tools / Equipment.
   - Razor Knife Cutter.
   - Paint Brush or Spatula.
   - Scraper.
2. Material.
   - Mat type 3M Brand Safety Walk –General Purpose, (black) (as necessary).
   - 3M Scotch- Grip 1236/847 Edge Sealer (as necessary).

- **Procedure.**

To Repair Roof Anti-skid Mat on local / limited area, proceed as follows:

WARNING: **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**
- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE REPAIR PROCEDURE.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.

2. Clean the involved area. (Approx **2 inches** each side more than the damaged area).
3. Mark the repair area.
4. By means of a razor knife cutter ,cut the mat, following accurately the marking lines.
5. Putting under stress an edge of the piece of mat to be removed, strip/scrape, the adhesive primer layer between the mat and the roof.
6. Remove the piece of the mat.
7. Clean and degrease the roof surface using degreaser / solvent (Refer Section 1, Table 1-9).
8. Rinse few times with water and dry each time with fluff proof rags the roof surface until the surface is completely free of any kind of residues.
9. Verify the Roof Finished Paint Surface for damage. If necessary apply a light coat of ACRI-PUR transparent, paint and allow it to dry.

CAUTION: DO NOT PROCEED WITH REPAIR IF ROOF STRUCTURE AND / OR NEW PIECE OF MAT TEMPERATURE ARE /IS LESS THAN 39.2 ℉.

THE RECOMMENDED TEMPERATURE TO PERFORM REPAIR IS 69.8 ° F.

10. Once the Roof paint has been dried apply a thin coat of the primer type 3M Scotch –Grip 1236 /847 using a paint brush or spatula and allow the primed area to dry before applying the new anti slip mat piece.
11. Prepare the part of the mat type **3M Brand Safety Walk –General Purpose, (black)** to be installed by cutting it (from the standard roll) with **0.07-0.08 inches** less than the length of each side of the involved roof area previously prepared.
12. Round the corner of the mat piece (**round radius 0.39 –0.59 inches**) before remove the protective liner
13. Peel the protective liner
14. Position the mat on the previously roof prepared area and remove contingent air bubbles or wrinkles using a clean spatula or piece of wood free of indentations.

CAUTION: AVOID TO REMOVE BUBBLES BY PIERCING THE MAT.

15. After new mat application seal all around the clearance **(0.07-0.08 inches)** between the new piece of mat and the existing roof mat using 3M Scotch-Grip 1236/847 Edge Sealer.

NOTE1: Once applied the new mat , it is possible to immediately walk on without damage.

NOTE2: The adhesive primer will complete the polymerization process within 4 days at roof temperature of **69.8 °F** .

c) Antiskid Mat Edge Sealing Bead

Following is provided the procedure to repair Roof Antiskid Mat Edge Sealing Bead on local /limited areas where damage/deformation are found.

- **Reference Information.**

  1. Tools / Equipment.
     - Razor Knife Cutter.
     - Scraper.
  2. Material.
     - 3M Scotch- Grip 1236/847 Edge Sealer.

- **Procedure**

  To Repair Antiskid Mat Edge Sealing Bead on local / limited area, proceed as follows:

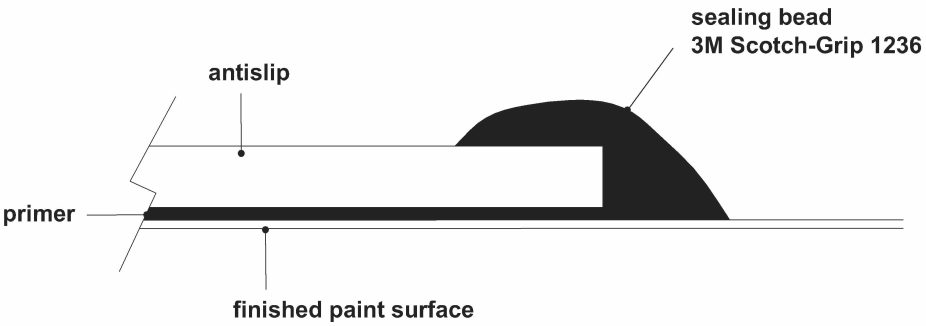
WARNING: **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**
- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE INSPECTION PROCEDURE.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE

ROOF – DO NOT OPERATE THE SWITCH".

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
2. Clean the involved area. (Approx **2 inches** each side more than the damaged area).
3. Mark the repair area.
4. By means of a razor knife cutter, cut the Sealing Bead, following accurately the marking lines.
5. Putting under stress an edge of the piece of Sealing Bead to be removed, strip/scrape, the piece of Sealing Bead.

   CAUTION: PAY ATTENTION TO NOT DAMAGE THE ANTISKID MAT AND / OR THE PRIMER AND / OR THE ROOF FINISHED PAINT.

6. Remove the piece of the Sealing Bead.
7. Clean and degrease the repair area using degreaser / solvent (Refer Section 1, Table 1-9).
8. Rinse few times with water and dry each time with fluff proof rags the repair area until the surface is completely free of any kind of residues.
9. Check the Antiskid Mat for damage / deformation. (If found repair it following the instruction provided in the previous subpara. Before to proceed with the following step).
10. Apply new Sealing Bead using 3M Scotch- Grip 1236/847 Edge Sealer. as indicated below.



SECTION OF EDGE AREA OF ANTISLIP MAT

CAUTION: WHEN ANY SERIOUS DAMAGE IS DETECTED APART FROM MENTIONED ABOVE REFER TO ENGINEERING DEPARTMENT REPAIR PARAMETERS & PROCEDURE TO ENSURE CAR STRUCTURAL INTEGRITY.

NOTE: Depending upon the severity of the damage do the following

1. Visual inspection
2. Liquid penetration inspection
3. Magnetic flux inspection
4. Radiography

2-2.4.h Reassembly (Not Applicable)

2-2.4.i Adjustment/Test (Not Applicable)

2-2.5 Windows and Windshield

2-2.5.1 Windows

2-2.5.1.a Description and Theory of Operation

The Windows (Refer to Figure 2-2.17) installed in the vehicle are located in the "A", "B" and Articulation Section.

All windows are fixed type except the window (Sliding type) located in the Operator's Cab (operator side only).

- Fixed Window

All windows are made with single density, safety laminated sheet glass supported directly by the car structure with neoprene glazing gasket.

The glazing sections are designed to make a watertight seal without the need for sealing compounds.

The glass of the windows located in the passenger compartment is tinted.

All window assemblies are provided with light alloy frames installed on the vehicle's structure.

Individual side windows are interchangeable with windows of the same side.

- Sliding Cab Window

The Sliding Cab Window consists of a light alloy frame installed on vehicle structure end to which is installed the Fixed Section and the Sliding Section.

The Sliding Section consists of two Rail-Frames (lower and upper) and one sliding glass equipped with a latch device.

The Sliding Section can be easily operated using only the left hand when the operator is seated on the operator seat.

The Fixed Section is also installed between the Rail Frames.

Between the Window Frame and the Rail-Frames (lower part and upper part respectively) are installed the lower fixed glass and the upper fixed glass.

The upper fixed glass is provided with tinted adhesive film.

NOTE: For Description and Operation of Windows installed in the Doors, refer to Section 4.

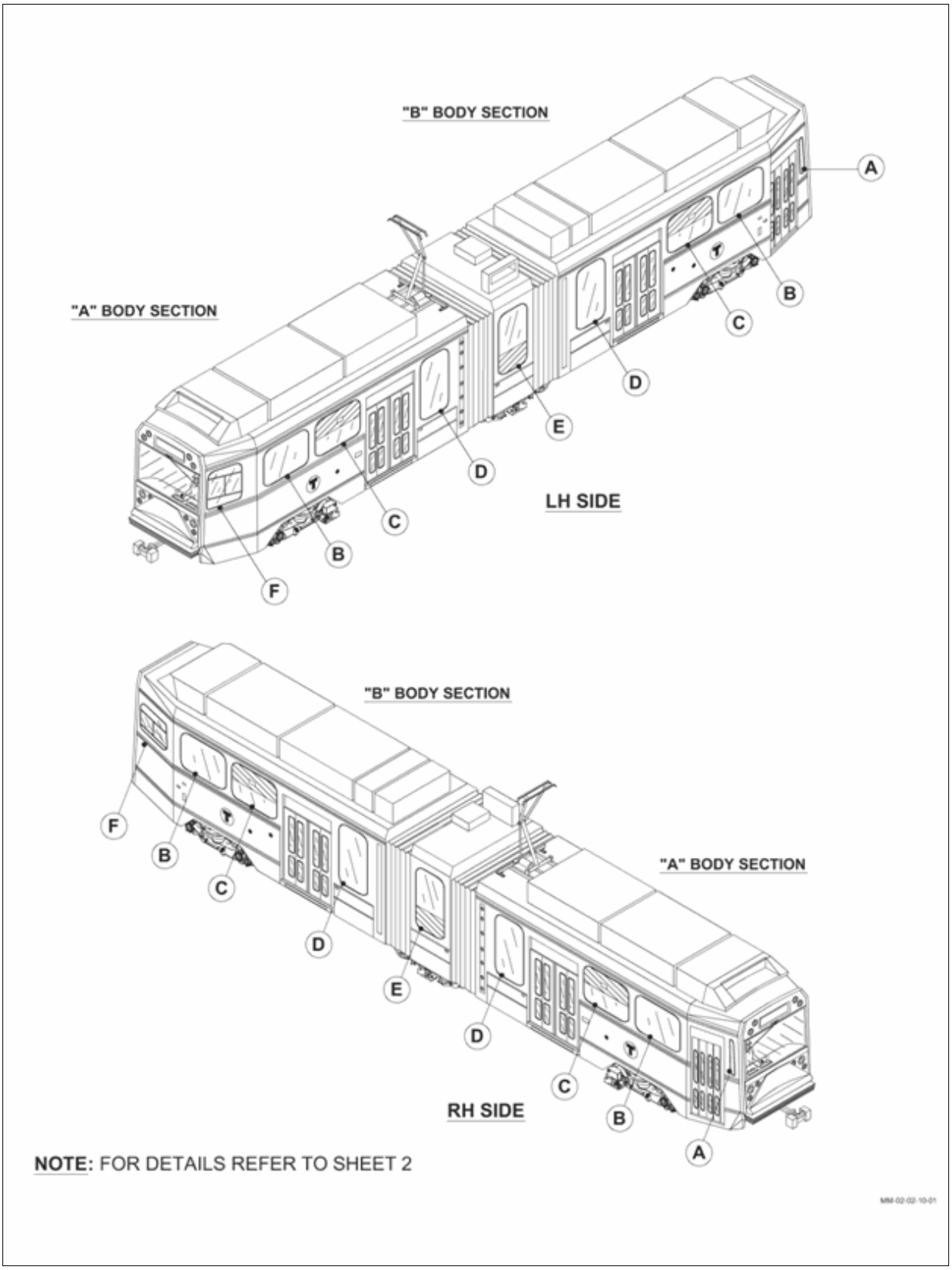


Figure 2-2.17 Windows – Components Location (Sheet 1 of 2)

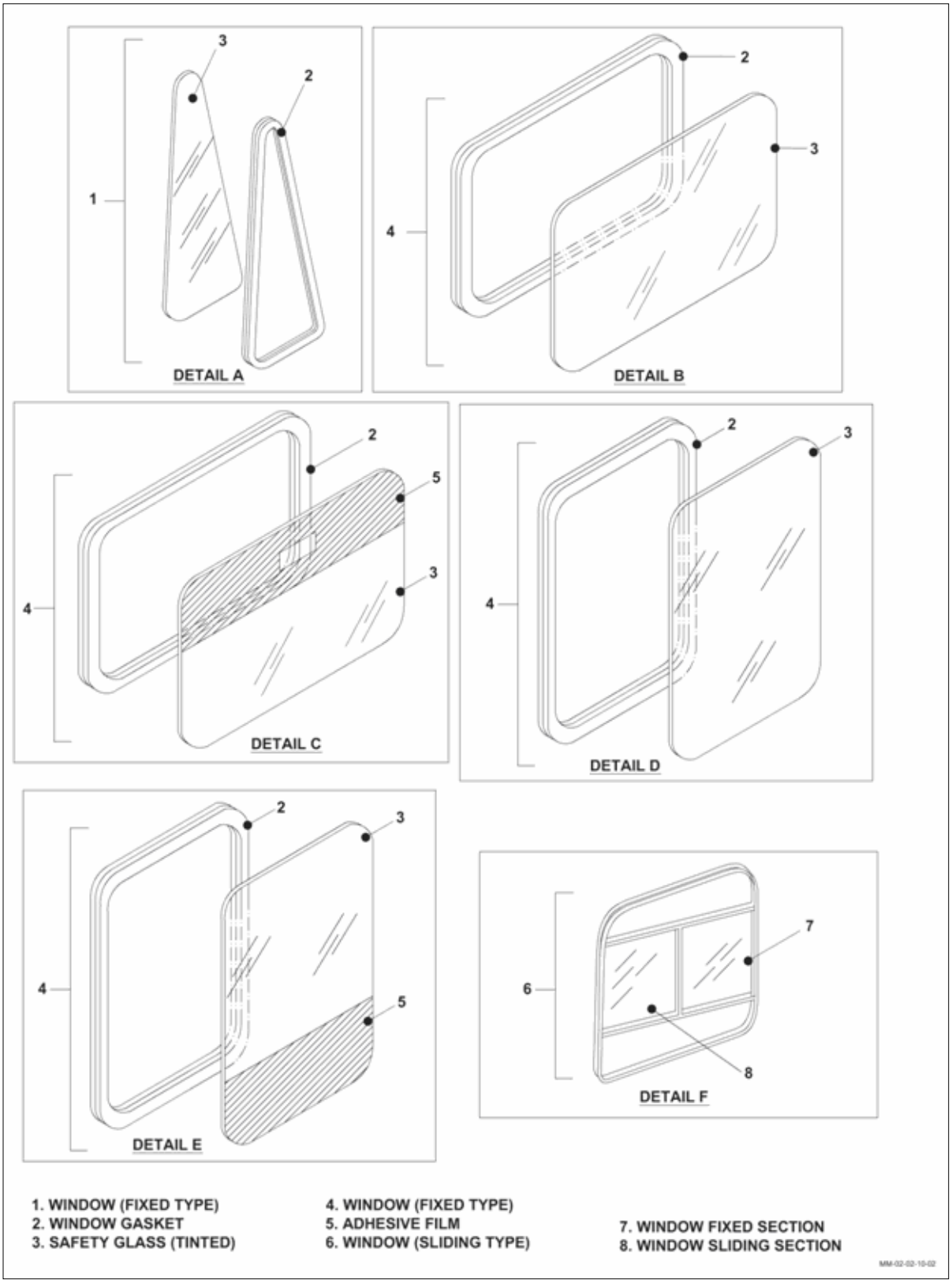


Figure 2-2.17 Windows – Components Location (Sheet 2 of 2)

2-2.5.1.b Specific Safety Precautions

WARNING: **DURING WINDOW MAINTENANCE, OPERATE WITH EXTREME CARE TO PREVENT GLASS BREAKING AND POSSIBLE BODY INJURY.**

WARNING: **DURING SLIDING TYPE WINDOW REMOVAL/INSTALLATION PROCEDURES, DO NOT APPLY SUCTION CUPS ON SLIDING WINDOW SECTION; DOING SO MAY CAUSE THE GLASS TO DISENGAGE FROM THE FRAME AND BREAK, CAUSING POSSIBLE BODY INJURY.**

WARNING: **USE 100 LB MIN CAPACITY HOISTING DEVICE TO PERFORM EACH WINDOW ASSEMBLY REMOVAL/INSTALLATION.**

CAUTION: DO NOT USE ON WINDOWS THE FOLLOWING CLEANING PRODUCTS:
FLUORIDE ACID BRIGHTENERS, STRONG SODIUM HYDROXIDE CLEANERS, STRONG POTASSIUM HYDROXIDE CLEANERS, ABRASIVE CLEANERS.

CAUTION: DO NOT USE ON RUBBER COMPONENTS THE FOLLOWING PRODUCTS:
METHYLENE CHLORIDE SOLVENTS, COMMERCIAL PAINT STRIPPERS.

2-2.5.1.c Fault Isolation

For Windows Fault Isolation procedure, refer to Table 2-2.7.

Table 2-2.7 Windows - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
FIXED AND SLIDING WINDOW		
1. Water leakage.	1. Gasket between glass and window frame damaged.	1. Remove the window glass and replace the gasket (Refer to para 2-2.5.1.d a)).
	2. Gasket between window frame and sidewall damaged.	1. Replace the gasket (Refer to para 2-2.5.1.d a)).
SLIDING WINDOW		
2. Sliding section cannot be opened.	1. Latch device or window slides dirty.	1. Clean window slides and latch devices (Refer to para 2-2.5.1.d b)).
	2. Latch device or window slides damaged.	1. Replace defective component.

2-2.5.1.d Disassembly

The Windows Disassembly procedure consists in the following main operations:

– Fixed Window Glass Removal.

– Sliding Cab Window Removal.

– Adhesive Film Removal.

a) Fixed Window Glass Removal

- **Reference Information.**

  1. Tools /Equipment.
     - Wheel Chocks.
     - Hoisting Device (100 lb min capacity).
     - Window Suction Cups (25 lb min capacity).
     - Nylon Tool (REFER MCMASTER CARR PART NO. 6036A21 OR EQUIVALENT).
  2. Material (Not Applicable).

- **Procedure.**

  To Disassembly each window Glass, proceed as follows (Refer to Figure 2-2.18):

> **WARNING:** **EACH FIXED WINDOW GLASS WEIGHS 70 LB (31.7 KG) ABOVE. DURING THE DISASSEMBLY PROCEDURE MAKE SURE THAT HOISTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Apply four window suction cups on external side of glass (1) and connect them to a hoisting device (100 lb capacity min.).
3. Gently put the hoisting device cables under stress.
4. Using a nylon tool (6), open the gasket lock strip (3) and remove it.
5. Push on internal side of glass surface to allow the gasket deformation.
6. Hoist the glass and remove it from window frame (4).
7. Remove gasket (2) from window frame (4).

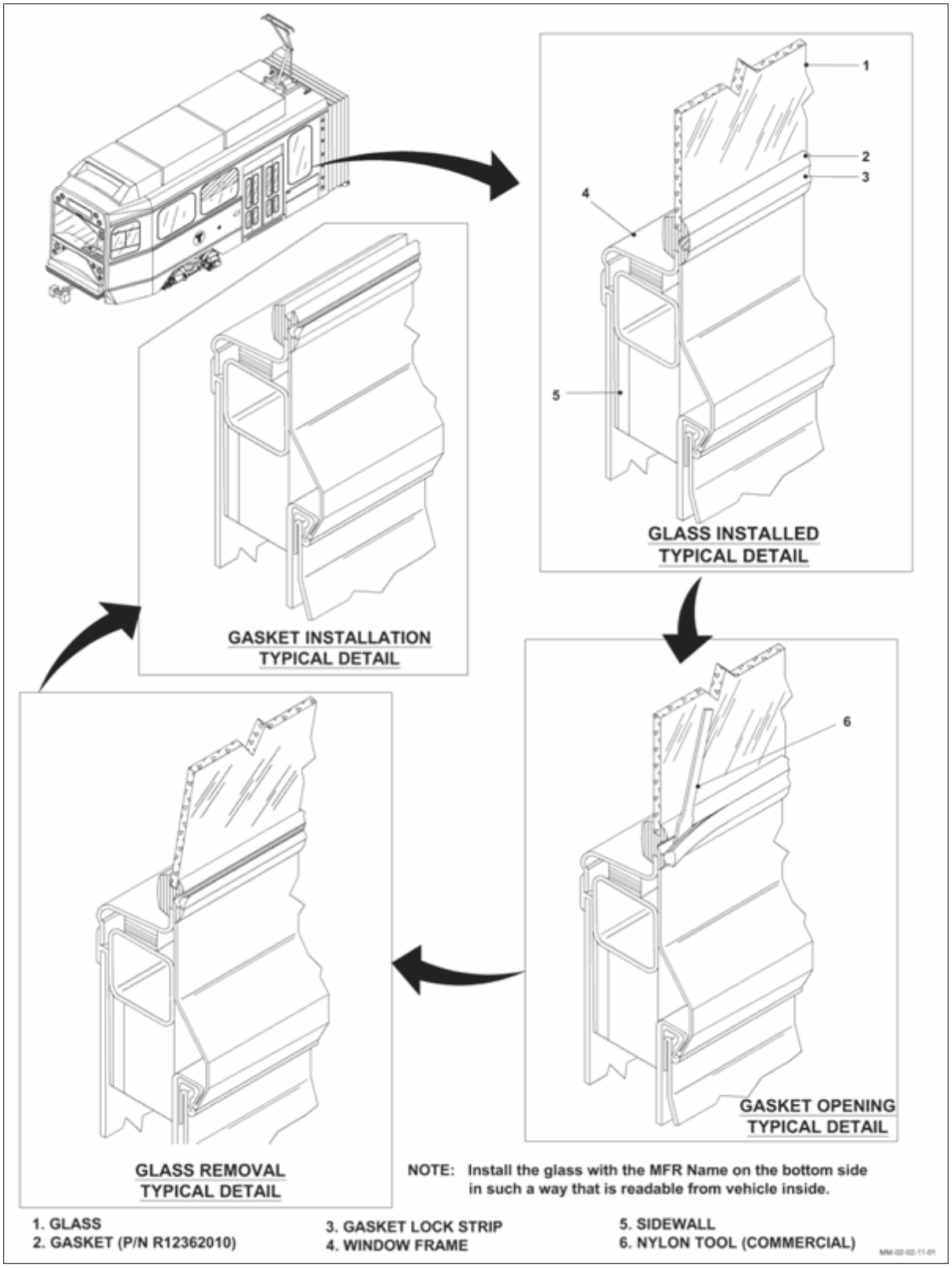


Figure 2-2.18 Fixed Window Glass – Typical Disassembly

b) Sliding Cab Window Removal

- **Reference Information.**

  1. Tools /Equipment.
     - Wheel Chocks.
     - Hoisting Device (100 lb min capacity).
     - Window Suction Cups (25 lb min capacity).
     - Nylon Tool (REFER MCMASTER CARR PART NO. 6036A21 OR EQUIVALENT).
  2. Material (Not Applicable).

- **Procedure.**

  The Sliding Cab Window is supplied by the Manufacturer as a whole assembly even if it consists of 4 glasses of different sizes.

  For this reason the Disassembly Procedure provided below is applicable only to the whole Sliding Cab Window assy.

  The procedures doesn't include the replacement of any single glass.

WARNING:	**EACH SLIDING CAB WINDOW ASSY WEIGHS 100 LB (45,3 KG) ABOVE. DURING THE DISASSEMBLY PROCEDURE MAKE SURE THAT HOISTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

WARNING:	**DURING SLIDING TYPE WINDOW DISASSEMBLY PROCEDURES, DO NOT APPLY SUCTION CUPS ON SLIDING WINDOW SECTION; DOING SO MAY CAUSE THE GLASS TO DISENGAGE FROM THE FRAME AND BREAK, CAUSING POSSIBLE BODY INJURY.**

- **Procedure.**

  To Disassembly Sliding Window Assy, proceed as follows (Refer to Figure 2-2.19):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Apply five window suction cups on window external side (on the Fixed Glass only) and connect them to hoisting device (100 lb capacity min).

3. Gently put the hoisting device cables under stress.
4. Pull out plugs (6).
5. Remove screws (5) and pull out frame (7) with gasket (4).
6. Remove screws (3) and brackets (2).
7. Using the hoisting device remove window assy (1) from vehicle.

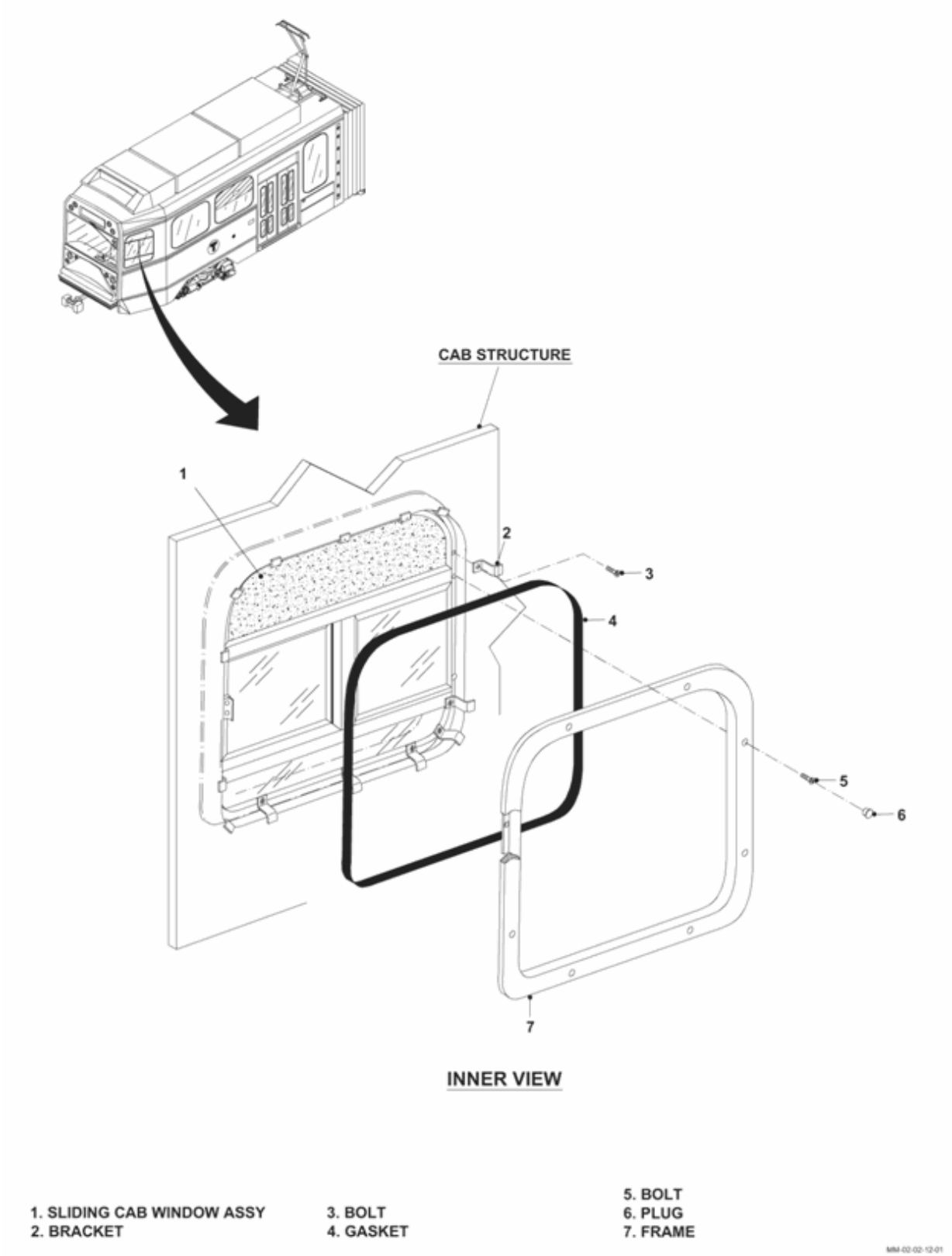


Figure 2-2.19 Sliding Cab Window Assy – Disassembly

c) Adhesive Film Removal

- **Reference Information.**

1. Tools /Equipment.
   - Nylon Tool (REFER MCMASTER CARR PART NO. 6036A21 OR EQUIVALENT).
2. Material (Not Applicable).

- **Procedure.**

To Remove Adhesive Film, proceed as follows:

1. Remove Fixed Window Glass (Refer to para 2-2.5.1.d a)).
2. Using a nylon tool lift a film corner and remove it from wingow glass.

2-2.5.1.e Cleaning/Painting

a) Cleaning

- **Reference Information.**

1. Tools / Equipment.
   - MBTA approved Cleaning Tools / Equipment (commercial).
2. Material.
   - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).

- **Procedure.**

Fixed Windows

To Clean each Window Glass and Window Frame proceed as follows:

1. Window Glass.
   a. Clean each window Glass (External and Internal side) using window detergent and clean cloth.
2. Window Frame.
   a. Clean each window Frame using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air.

Sliding Cab Window

To Clean the Window Glass, Window Slides/Latch Device and Window Frame proceed as follows:

CAUTION: DO NOT USE OIL, GREASE OR OTHER COMPONENTS TO LUBRICATE THE SLIDE AND LATCH DEVICE. THE WINDOW ASSEMBLY COMPONENTS MAY BE DAMAGED BY LUBRICANT PRODUCTS.

1. Window Glass.
   a. Clean each window Glass (External and Internal side) using window detergent and clean cloth.
2. Window Slides/Latch Device.
   a. Clean each window Slides/Latch Device using mild detergent diluted in water; rinse with clean water and blow dry with compressed air.
3. Window Frame.
   a. Clean each window Frame using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air.

b) Painting (Not Applicable)

2-2.5.1.f Inspection

- **Reference Information.**
  1. Tools /Equipment (Not Applicable).
  2. Material (Not Applicable).

  Fixed Windows
- **Procedure.**

  To Inspect each window, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect glass and gaskets for damage/deformation.
  3. Inspect frame for damage and correct installation.
  4. Inspect adhesive film for scratch, damage and correct installation.
  5. Inspect for water leakage.
  6. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

Sliding Cab Window

- **Procedure.**

  To Inspect each Sliding Cab window, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect glass and gaskets for damage/deformation.
  3. Inspect frame for damage and correct installation.
  4. Inspect slides/latch devices for damage/deformation.
  5. Inspect slides for free movement and the latch devices for correct installation.
  6. Inspect for water leakage.
  7. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.5.1.g Repair

Window Assembly is repaired by replacing the damaged component.

2-2.5.1.h Reassembly

The Windows Reassembly procedure consists in the following main operations:

– Fixed Window Glass Installation.

– Sliding Cab Window Installation.

– Adhesive Film Installation.

a) Fixed Window Glass Installation

- **Reference Information.**

  1. Tools /Equipment.
     - Wheel Chocks.
     - Hoisting Device (100 lb min capacity).
     - Window Suction Cups (25 lb min capacity).
     - Nylon Tool (REFER MCMASTER CARR PART NO. 6036A21 OR EQUIVALENT).

2. Material.
   - Window Gasket P/N 12362010.

- **Procedure.**

  To Reassembly each Window Glass, proceed as follows (Refer to Figure 2-2.20):

WARNING:	**EACH FIXED WINDOW GLASS WEIGHS 70 LB (31.7 KG) ABOVE. DURING THE REASSEMBLY PROCEDURE MAKE SURE THAT HOISTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Clean gasket seat (on frame (4)) using cleaning rags.
3. Install new gasket (2) around window frame (4), as shown.

   NOTE: Install the glass with the MFR Name on the bottom side in such a way that the MFR Name is readable from vehicle inside.

4. Apply four suction cups to external side of glass and connect them to a hoisting device (100 lb capacity min.).
5. Hoist the glass (1) and install it on the gasket (2).
6. When the glass (1) is in position, move the gasket (2) to lock the glass (1): check the correct position of the glass into the gasket.
7. Fit the gasket lock strip (3) in position.
8. Check (on both sides) that gasket matches the frame and the glass. Use a nylon tool to correct the matching.
9. Release and remove the suction cups and the hosting device.
10. Perform Vehicle Water Tightness Test refer to para 2-2.3.i b).

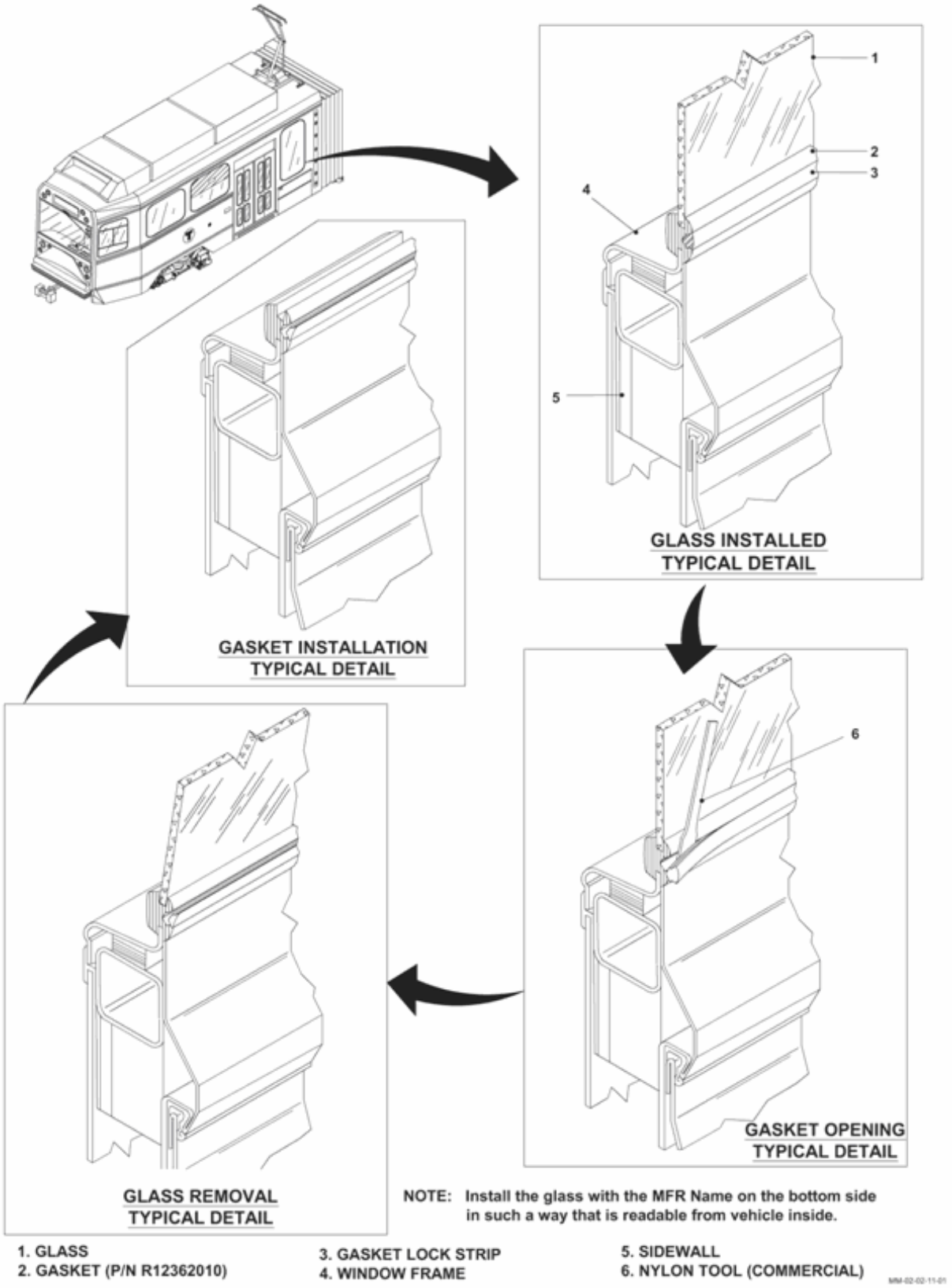


Figure 2-2.20 Fixed Window Glass – Typical Reassembly

b) Sliding Cab Window Installation

- **Reference Information.**

  1. Tools /Equipment.
     - Wheel Chocks.
     - Hoisting Device (100 lb min capacity).
     - Window Suction Cups (25 lb min capacity).
  2. Material (Not Applicable).

- **Procedure.**

  The Sliding Cab Window is supplied by the Manufacturer as a whole assembly even if it consists of 4 glasses of different sizes.

  For this reason the Reassembly Procedure provided below is applicable only to the whole Sliding Cab Window assy.

  The procedures doesn't include the replacement of any single glass.

WARNING:	**EACH SLIDING CAB WINDOW ASSY WEIGHS 100 LB (45,3 KG) ABOVE. DURING THE REASSEMBLY PROCEDURE MAKE SURE THAT HOISTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

WARNING:	**DURING SLIDING TYPE WINDOW REASSEMBLY PROCEDURES, DO NOT APPLY SUCTION CUPS ON SLIDING WINDOW SECTION; DOING SO MAY CAUSE THE GLASS TO DISENGAGE FROM THE FRAME AND BREAK, CAUSING POSSIBLE BODY INJURY.**

- **Procedure.**

  To Reassembly Sliding Window Assy, proceed as follows (Refer to Figure 2-2.21):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean window seat using cleaning rags.
  3. Apply five window suction cups on window external side (on the Fixed Glass only) and connect them to hoisting device (100 lb capacity min).

4. Hoist window assy (1) and install in the related seat.
5. Install brackets (2) and lock them installing screws (3).
6. Install gasket (4) and position frame (7).
7. Install screws (5) and plugs (6).
8. Release and remove the suction cups and hoisting device.
9. Perform Vehicle Water Tightness Test refer to para 2-2.3.i b).

c) Adhesive Film Installation

- **Reference Information.**
  1. Tools /Equipment (Not Applicable).
  2. Material.
     - Glue Remover (commercial).
- **Procedure.**

  To Install Adhesive Film, proceed as follows:

  1. Remove from the window surface the remaining film glue using Glue Remover.
  2. Clean window glass using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air.
  3. Lift a film corner tape protection side and glue it on the related seat of the glass.
  4. With a cloth make a light pressure on the external side of the adhesive film and simultaneously remove protection tape and glue the film on the glass.
  5. Install Fixed Window Glass (Refer to para 2-2.5.1.h a)).

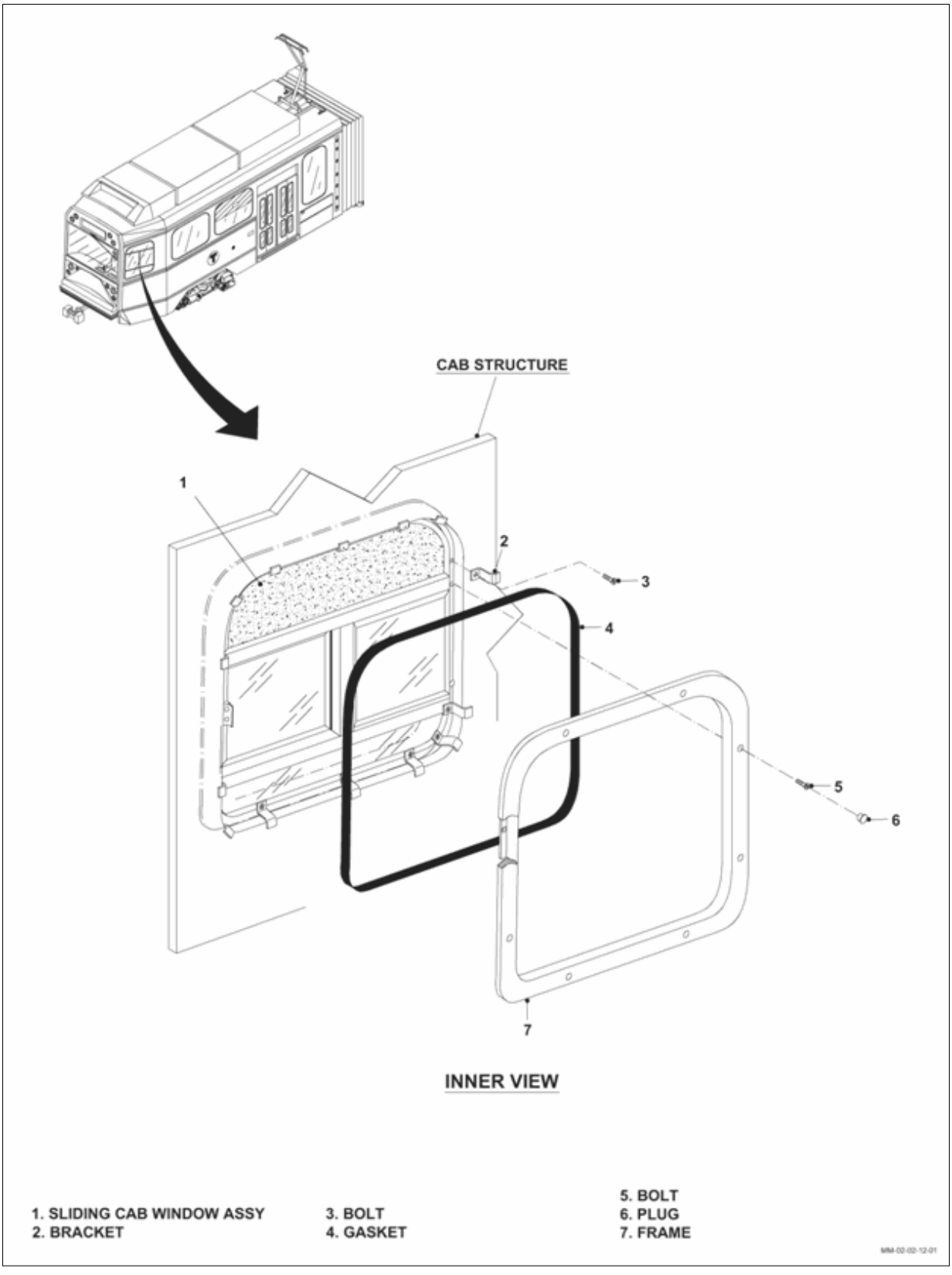


Figure 2-2.21 Sliding Cab Window Assy – Reassembly

2-2.5.1.i Adjustment/Test

a) Adjustment (Not Applicable)

b) Test

For Vehicle Water Tightness Test refer to para 2-2.3.i b).

2-2.5.2 Windshield

2-2.5.2.a Description and Theory of Operation

The Windshield (Refer to Figure 2-2.22), located at both ends of the Vehicle, is made of untinted laminated flat safety glass (19/32 in. thick) and is installed in the Operator's Cab structure from the outside. The windshield is provided with a gasket around it and is locked to the vehicle structure by moldings and screws. The windshield is designed and installed to minimize external glare as well as reflections from inside the vehicle when the vehicle is operated at night or in the tunnel with the passenger interior lighting illuminated. The windshield is provided with electrical heaters (built inside) that allows the defrosting / defogging. For Windshield Heater System Description, Operation and Maintenance procedures refer to para 2-4.6.

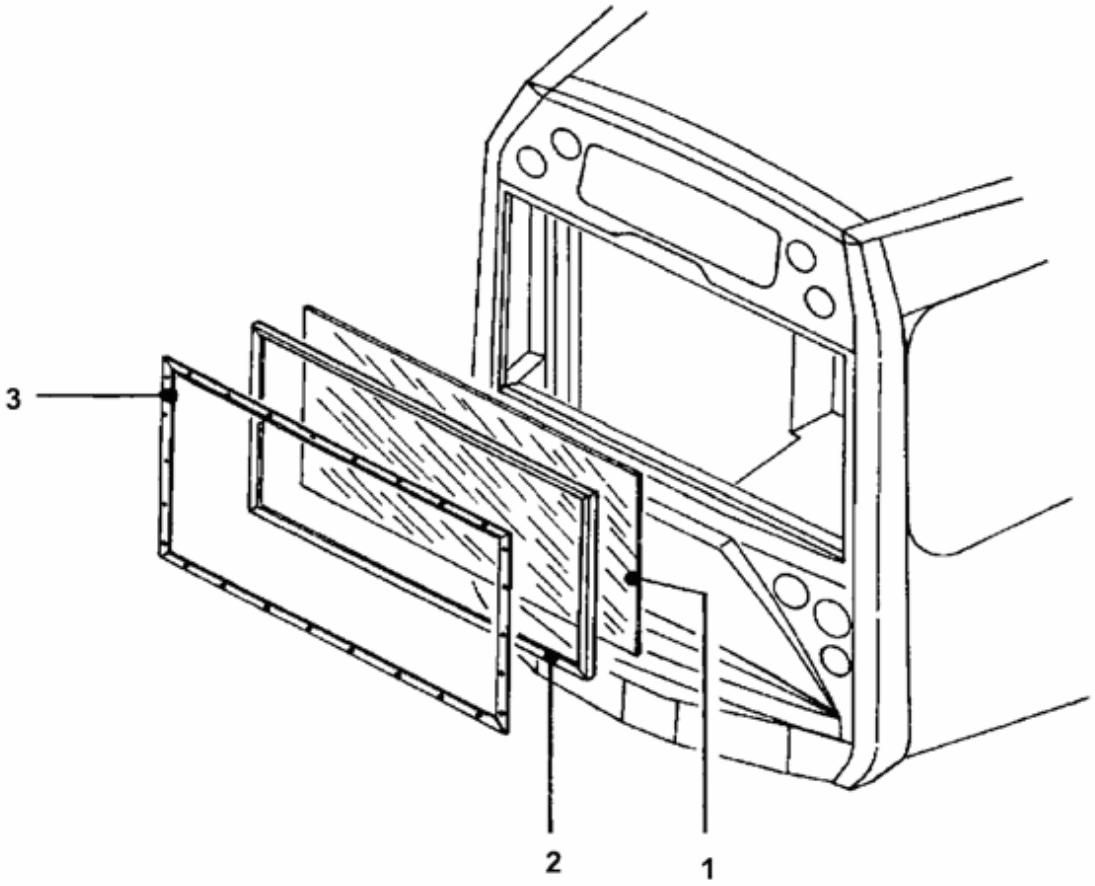


Figure 2-2.22 Windshield Components – Typical Section

2-2.5.2.b Specific Safety Precautions

WARNING:	**DURING WINDSHIELD MAINTENANCE PROCEDURES, OPERATE WITH EXTREME CARE TO PREVENT GLASS FROM BREAKING AND/OR BODILY INJURY.**

WARNING:	**THE WINDSHIELD ASSEMBLY WEIGHS 124 LB (56 KG) ABOVE. MAKE SURE TO SECURE IT DURING DISASSEMBLY/REASSEMBLY PROCEDURES.**

WARNING:	**BEFORE PERFORMING WINDSHIELD MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.** **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-2.5.2.c Fault Isolation

For Windshield Fault Isolation procedure, refer to Table 2-2.8.

Table 2-2.8 Windshield - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Water leakage.	1. Gasket faulty or damaged.	1. Remove the windshield and replace the gasket (Refer to para 2-2.5.2.d).
	2. Molding not properly fitted/attaching parts loosen.	1. Fasten.
2. Windshield damaged.	1. Impact.	1. Replace.

2-2.5.2.d Disassembly

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (200 lb min capacity).
     - No. 4 Window Section Cups (50 lb min capacity).
  2. Material (Not Applicable).
- **Procedure.**

To Remove Windshield, proceed as follows (Refer to Figure 2-2.23):

WARNING: THE WINDSHIELD ASSEMBLY WEIGHS 124 LB (56 KG) ABOVE. MAKE SURE TO SECURE IT DURING DISASSEMBLY PROCEDURE.

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Remove the Windshield Wiper Arm from motor unit (Refer to para 2-4.2.d a)).
3. Disconnect Heater System wires from windshield as follows:
   a. Remove nuts (8).
   b. Remove washers (7) and disconnect wires (9, 10) from terminal block (6).
4. Apply four suction cups on external windshield glass (1) side and connect them to a hoisting device (Min. capacity 200 lb).
5. Put the hoisting device's cable under stress.
6. Remove screws (5), washers (4) and rivnuts (11).
7. Remove the windshield frame (3).
8. Remove windshield (1) with gasket (2), using the hoisting device.
9. Remove the gasket (2).

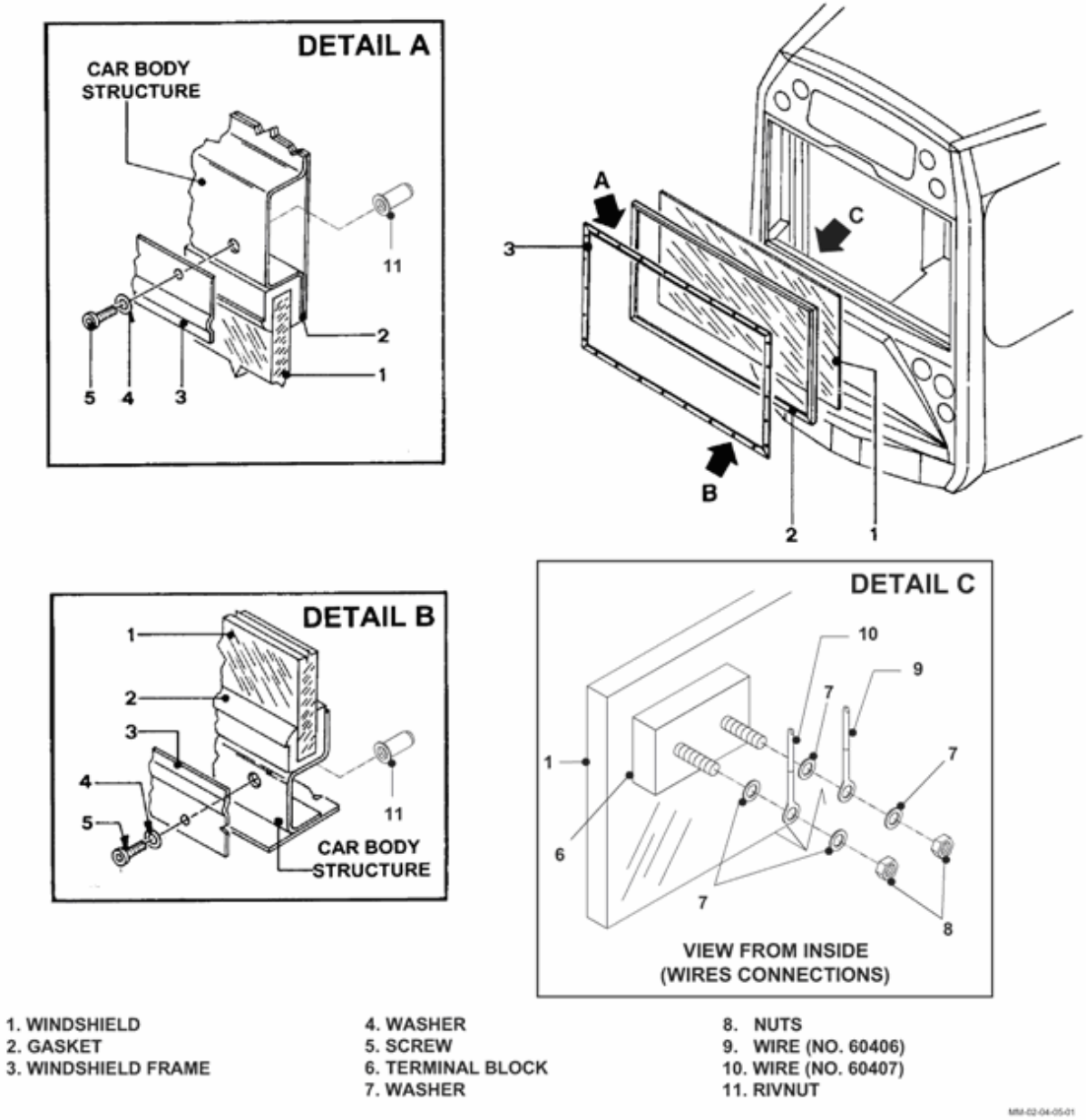


Figure 2-2.23 Windshield – Disassembly

2-2.5.2.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Windshield, proceed as follows:
  1. Clean the windshield glass using window detergent and clean cloth.

b) Painting (Not Applicable)

2-2.5.2.f Inspection

- **Reference Information.**
  1. Tools /Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Windshield, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect glass and gaskets for damage/deformation and correct installation.
  3. Inspect frame for damage and correct installation.
  4. Inspect for water leakage.
  5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.5.2.g Repair

The Windshield components are designed to operate during vehicle operating life. The gasket must be replaced every time that the removal procedure is performed.

The Molding not seriously damaged can be repaired using standard tools, as for standard workshop practices.

2-2.5.2.h Reassembly

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (200 lb min capacity).
     - No. 4 Window Section Cups (50 lb min capacity).
  2. Material (Not Applicable).
- **Procedure.**

  To Install Windshield, proceed as follows (Refer to Figure 2-2.24):

> **WARNING:** **THE WINDSHIELD ASSEMBLY WEIGHS 124 LB (56 KG) ABOVE. MAKE SURE TO SECURE IT DURING REASSEMBLY PROCEDURE.**

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Clean the gasket seat, using cleaning rags. Mild detergent diluted in water should be used if necessary.
3. Clean gasket (2) and apply it to the glass as shown in detail A.
4. Apply four suction cups on windshield glass (1) with gasket (2) and connect them to a hoisting device (Min. capacity 200 lb).
5. Hold up windshield and place it in position.
6. Install windshield frame (3), washers (5), screws (6) and rivnuts (11).
7. Tighten all screws (6) to **29 lb-ft (39,3 Nm)**.
8. Release and remove the suction cups from glass.
9. Connect Heater System wires to the windshield as follows:
   a. Position washers (7) and wires (9, 10) as shown in the figure.
   b. Install nuts (8) and tighten to **7 lb-ft (9,5 Nm)**.
10. Install Windshield Wiper Arm (Refer to para 2-4.2.h a)).
11. Perform Vehicle Water Tightness Test refer to para 2-2.3.i b).

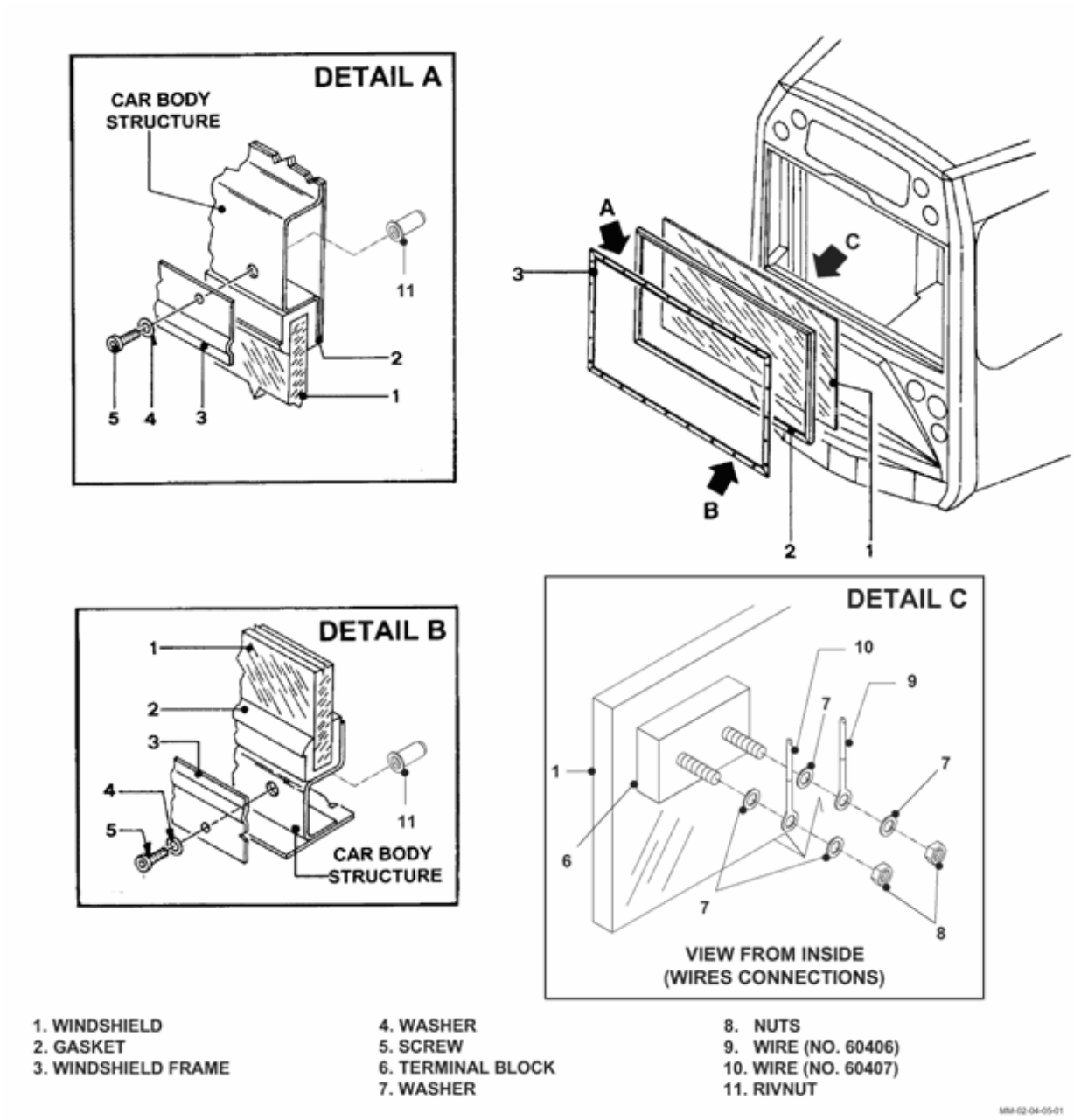


Figure 2-2.24 Windshield – Reassembly

2-2.5.2.i Adjustment/Test

a) Adjustment (Not Applicable)

b) Test

For Vehicle Water Tightness Test refer to para 2-2.3.i b).

2-2.6 External Panels

2-2.6.a Description and Theory of Operation

The vehicle is provided with External Panels (Refer to Figure 2-2.25) installed around the vehicle.

The Panels includes various equipment / controls as External Speakers, Bridgeplate Request Pushbutton, Crew Key Switches, etc.

All external panels are made of AA 5754-H22 light alloy except the front panels (upper and lower) made of fiberglass reinforced glass.

All External Panels are bolted to the structure, except the Battery Cover Panel (5), the Forward Cover Panel (1) and the Drum Switch Cover Panel (3), which are hinged to the equipped with Maintenance Key latches.

NOTE: For Crew Key Switch Cover and External Emergency Release Handle Door Description and Operation refer to Section 4.

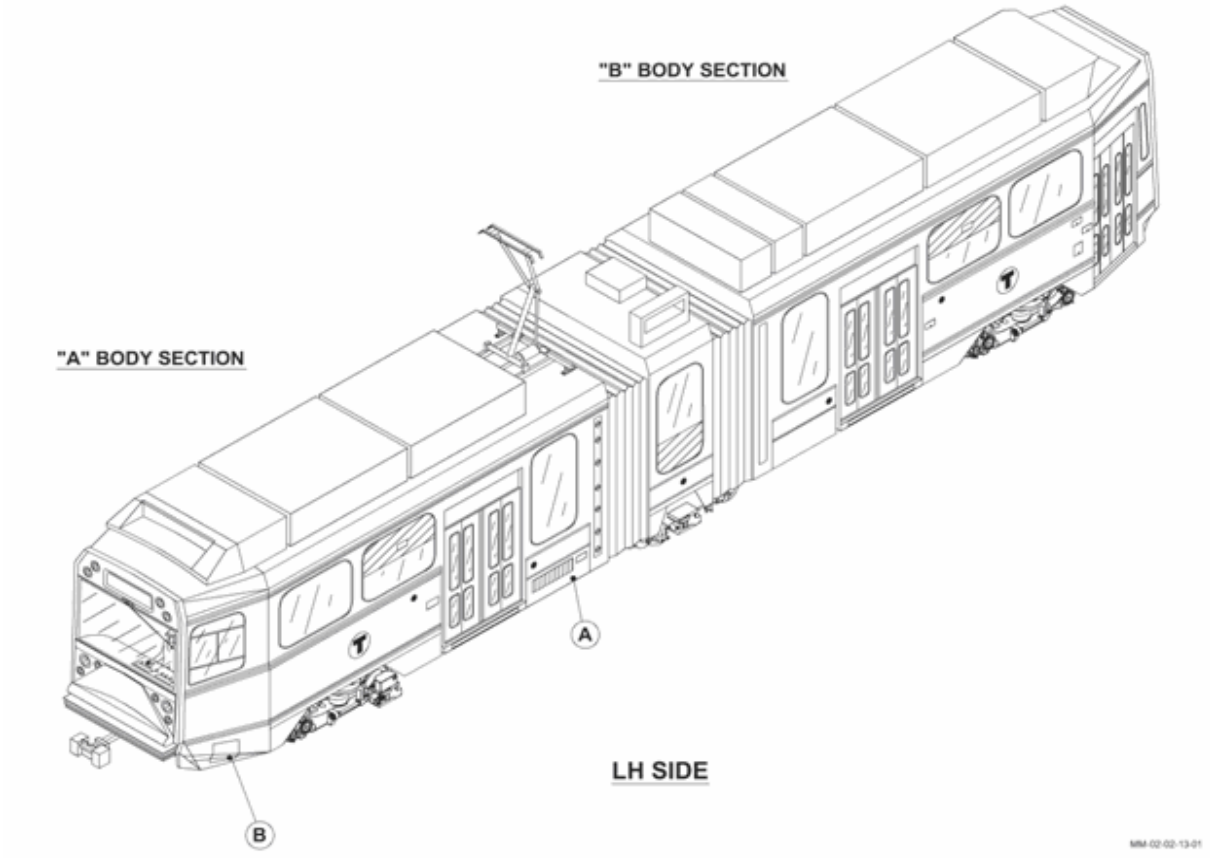


Figure 2-2.25 External Panels – Location (Sheet 1 of 4)

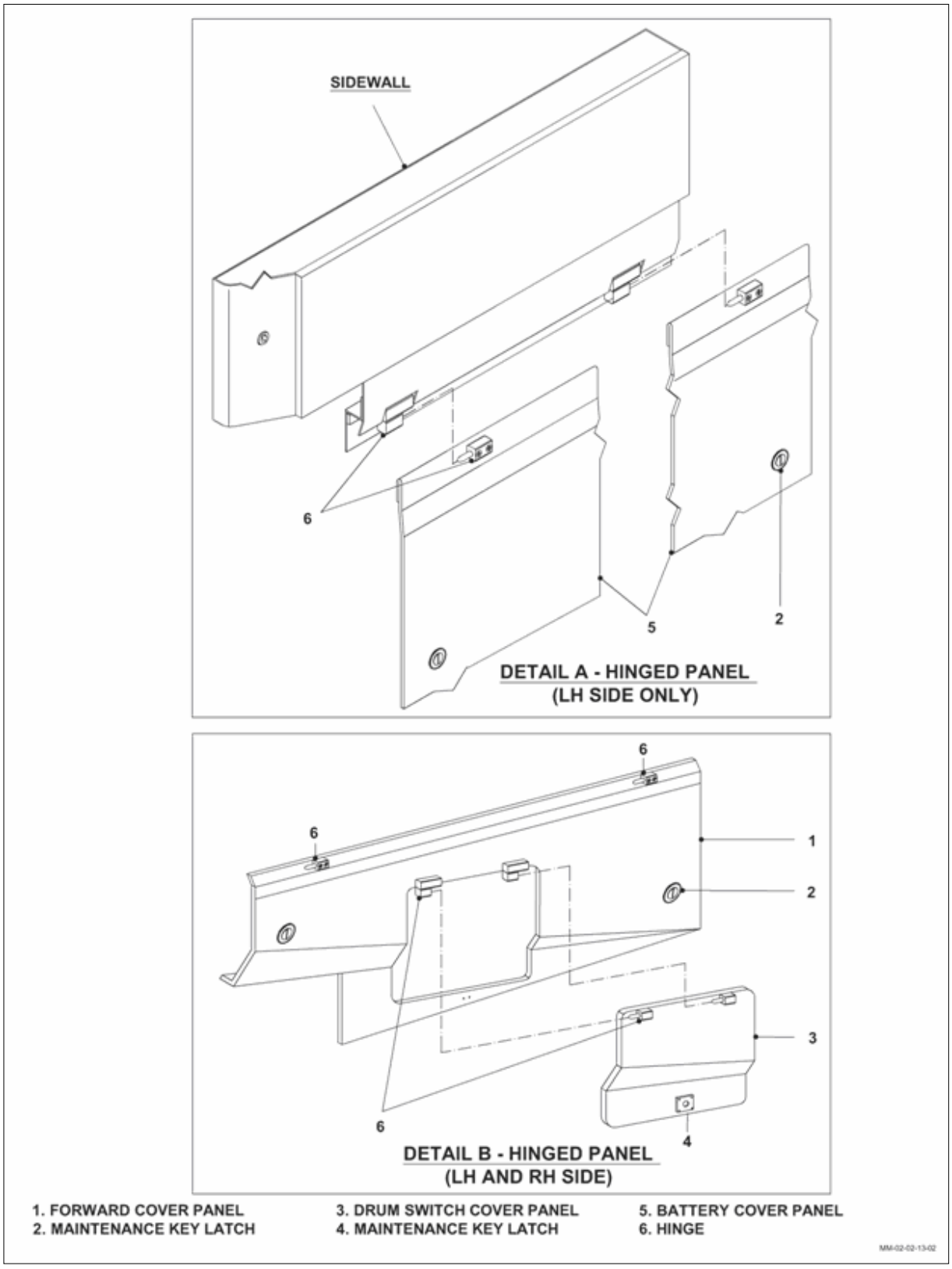
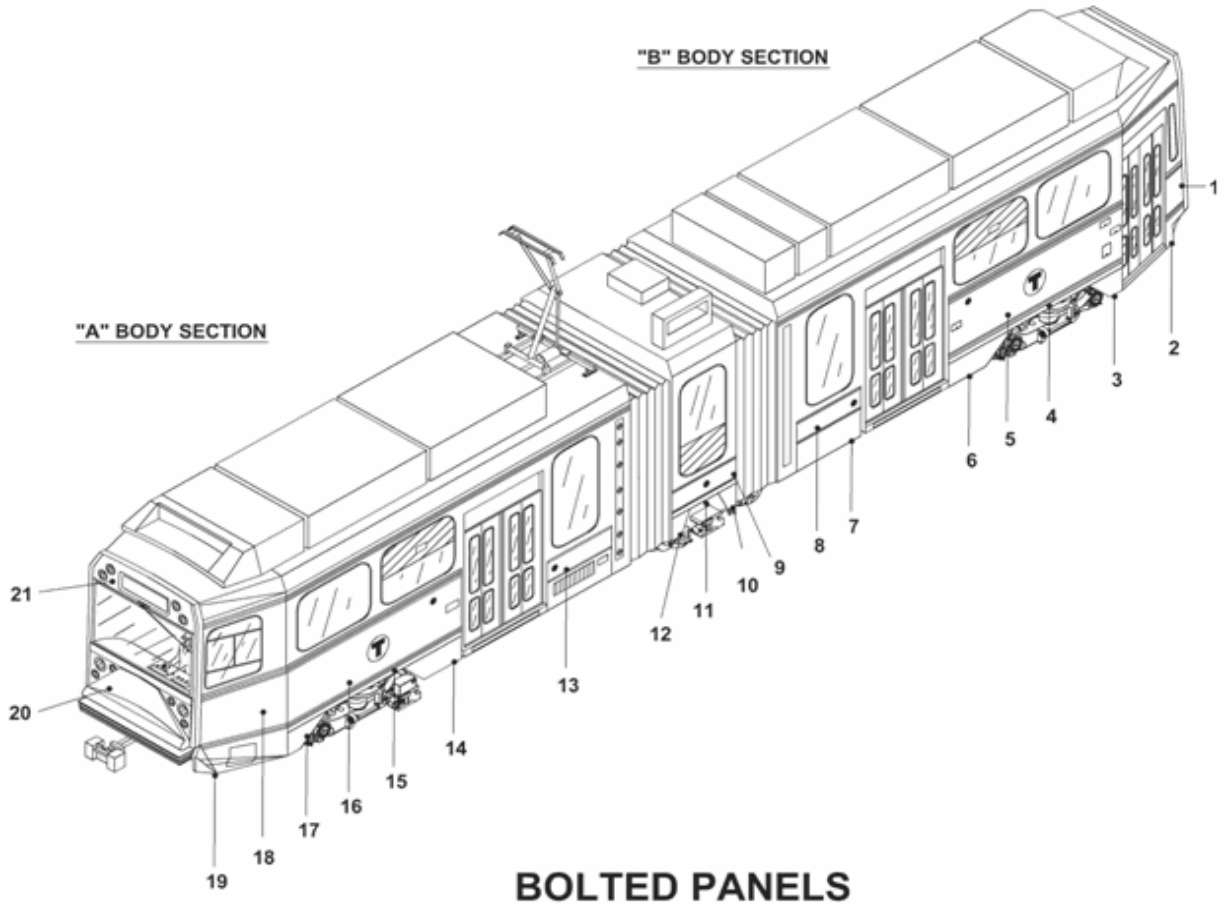


Figure 2-2.25 External Panels – Location (Sheet 2 of 4)



BOLTED PANELS
(LH SIDE)

1. SIDE PANEL
2. SIDE PANEL
3. SIDE PANEL
4. SIDE PANEL
5. SIDE PANEL
6. SIDE PANEL
7. SIDE PANEL
8. SIDE PANEL
9. SIDE PANEL
10. SIDE PANEL
11. SIDE PANEL
12. SIDE PANEL
13. SIDE PANEL
14. SIDE PANEL
15. SIDE PANEL
16. SIDE PANEL
17. SIDE PANEL
18. SIDE PANEL
19. SIDE PANEL
20. FRONT PANEL (LOWER)
21. FRONT PANEL (UPPER)

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Figure 2-2.25 External Panels – Location (Sheet 3 of 4)

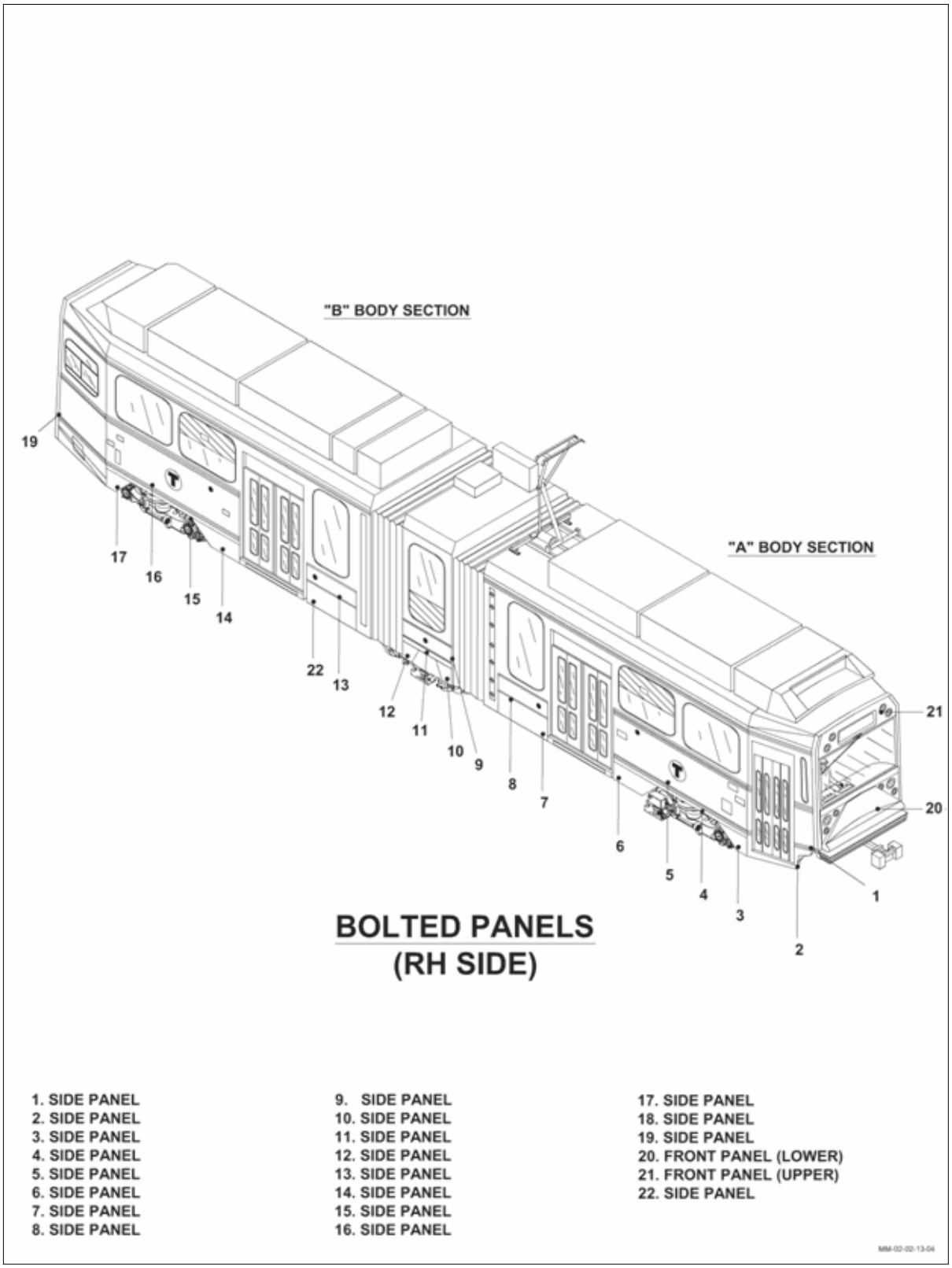


Figure 2-2.25 External Panels – Location (Sheet 4 of 4)

2-2.6.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORMING EXTERNAL PANELS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
> **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

> **WARNING:** **USE PROTECTIVE CLOTHING DURING PREPARATION AND USE OF RESIN MIXTURE. ADEQUATE VENTILATION MUST BE PROVIDED.**

2-2.6.c Fault Isolation

For External Panels Fault Isolation procedure, refer to Table 2-2.9.

Table 2-2.9 External Panels - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Carhouse Inspection Results indicate Side Panel(s) failure.	1. Panels seriously damaged.	1. Replace Panel. Refer to para 2-2.6.d.
	2. Panels not seriously damaged.	1. Repair Panel. Refer to para 2-2.6.g.
2. Carhouse Inspection Results indicate Front End Panel(s) failure.	1. Front End Panel seriously damaged.	1. Replace Panel. Refer to para 2-2.6.d.
	2. Front End Panel seriously damaged.	1. Repair Panel. Refer to para 2-2.6.g.

2-2.6.d Disassembly

The External Panels Disassembly procedure consists in the following main operations:

– Bolted Panels - Typical Removal.
– Hinged Panels (FWD, Battery and Drum Switch Cover Panels) - Typical Removal.
– Front End Panels (Upper and Lower) Removal.
– Shell Moldings – Removal.
– Maintenance Key Latch (Drum Switch Cover Panels) Removal.
– Maintenance Key Latch (FWD and Battery Cover Panel) Removal.

a) Bolted Panels - Typical Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Bolted Panel, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate panel to be removed.
  3. Remove Panel mounting bolts as necessary.
  4. Remove Panel.

b) Hinged Panels (FWD, Battery and Drum Switch Cover Panels) - Typical Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Hinged Panel, proceed as follows (Refer to Figure 2-3.26):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.

2. Locate hinged panel to be removed (2, 4, 5).
3. Using Maintenance Key, open panel.
4. Hold panel (2, 4, 5) and slide it from hinges (3).

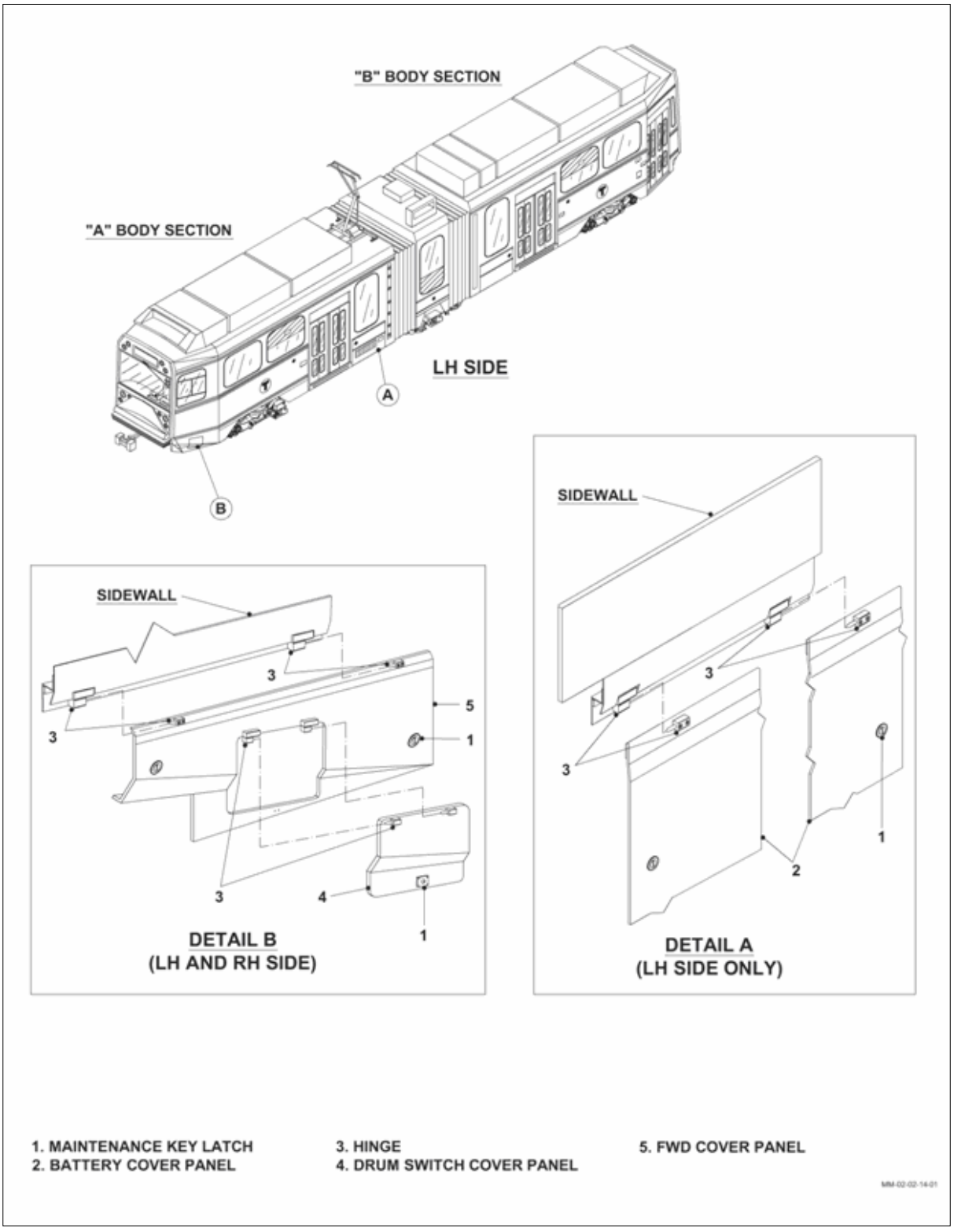


Figure 2-2.26 Hinged Panel (FWD, Battery and Drum Switch Cover Panels) – Typical Removal

c) Front End Panels (Upper and Lower) Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Front End Panel, proceed as follows (Refer to Figure 2-2.27):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove from related Panel screws (3), shims (4) and bushings (6).

     NOTE: Gaskets (5) are self-adhesive type. It isn't necessary to remove them.

  3. Remove carefully the panel.

d) Shell Moldings Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Shell Molding, proceed as follows (Refer to Figure 2-2.27):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove for the lower fastening: screws (3), bushings (6), gaskets (5), shims (4), washers (8) and nuts (9).
  3. Remove for the upper fastening: screws (3), bushings (6), gaskets (5), shims (4).
  4. Remove carefully shell molding.

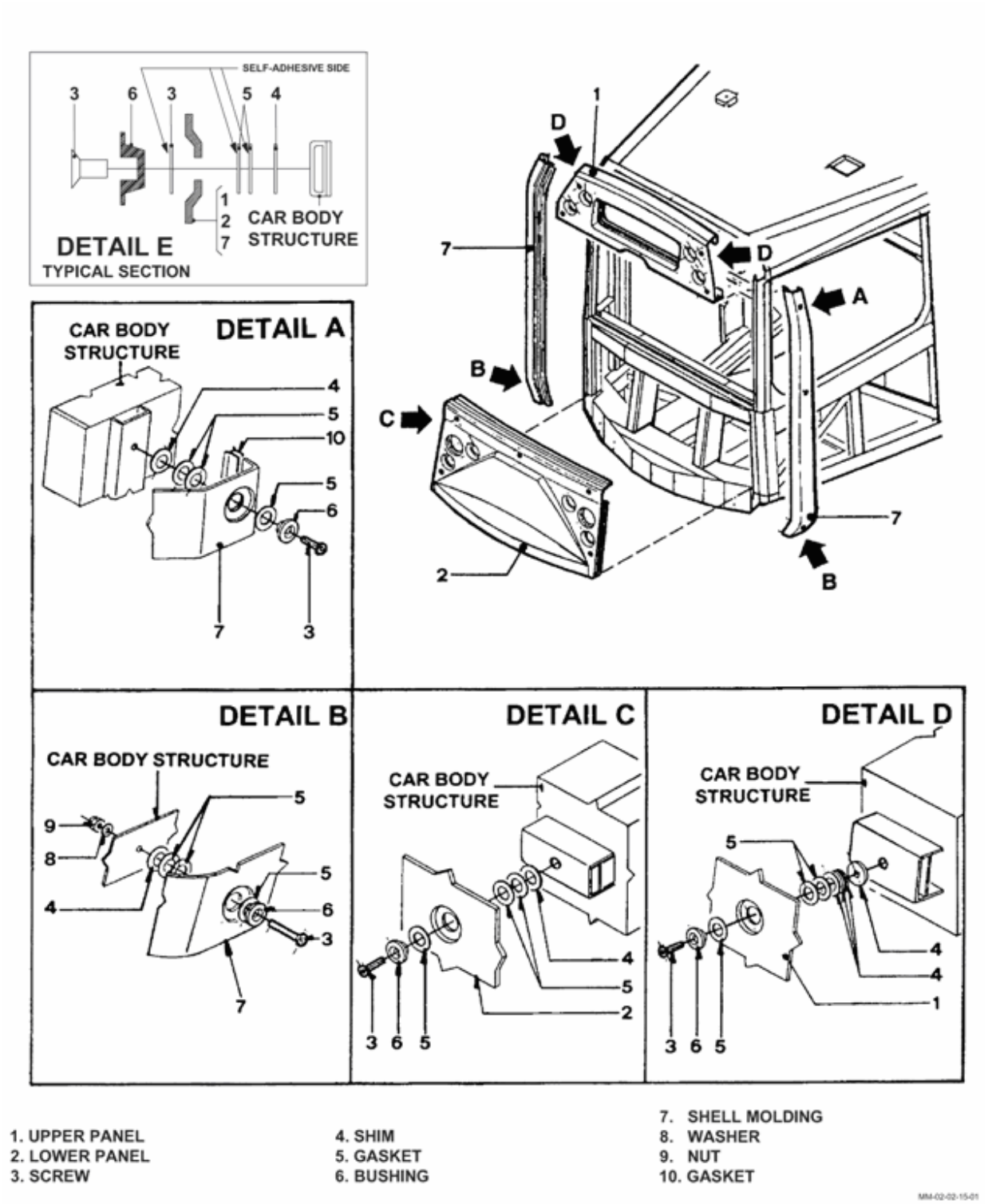


Figure 2-2.27 Front End Panels and Shell Moldings – Removal

e) Maintenance Key Latch (Drum Switch Cover Panels) - Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Drum Switch Cover Panel Latch, proceed as follows (Refer to Figure 2-2.28, Detail A):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove Drum Switch Cover Panel (Refer to para 2-2.6.d b)).
  3. Remove latch attaching parts and remove it from panel.

f) Maintenance Key Latch (FWD and Battery Cover Panel) - Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove FWD and Battery Cover Panel Latch, proceed as follows (Refer to Figure 2-2.28, Detail B):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove FWD and Battery Cover Panel (Refer to para 2-2.6.d b)).
  3. Disassemble / remove latch attaching parts and remove it from panel.

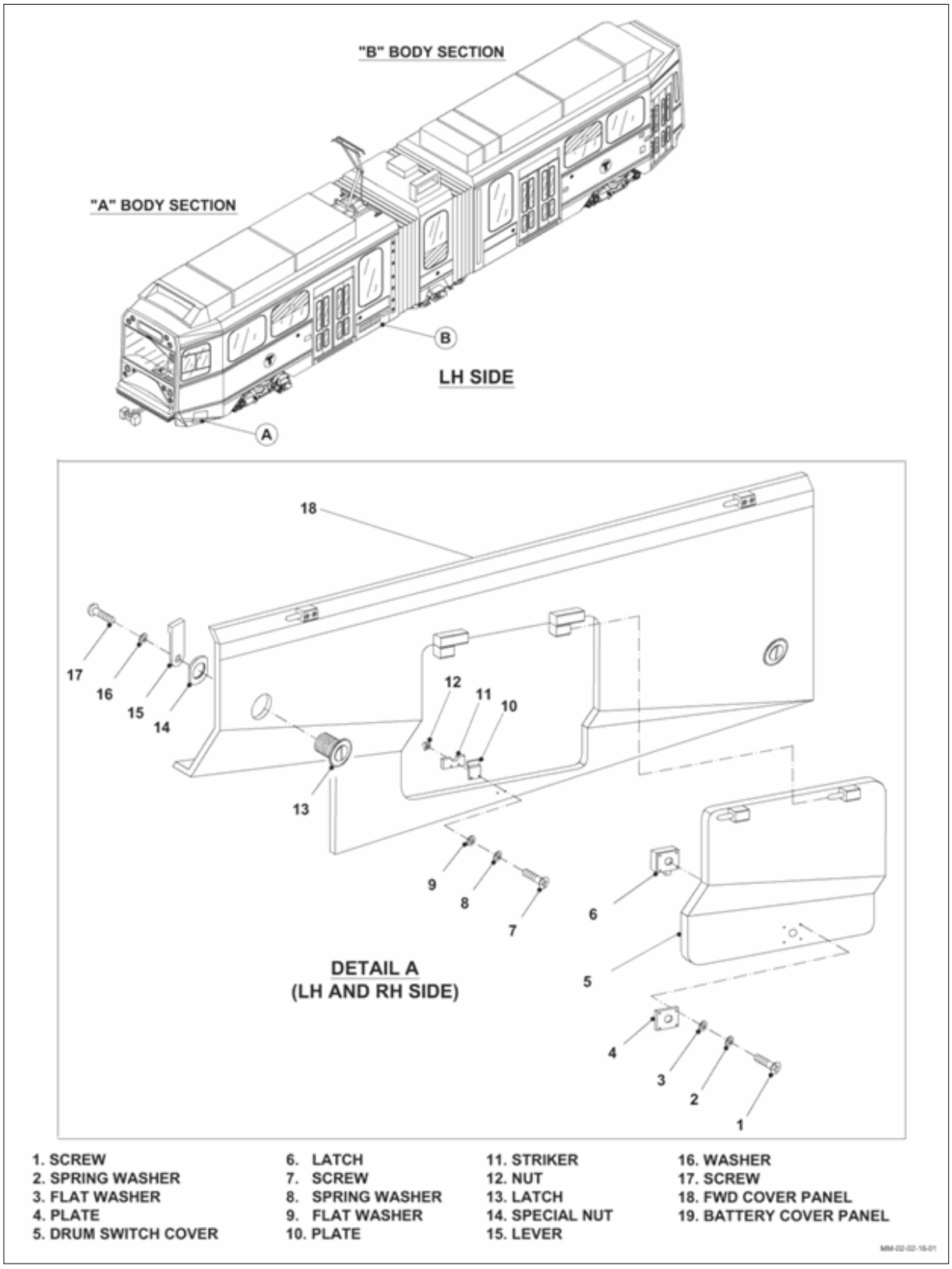


Figure 2-2.28 Maintenance Key Latches – Removal (Sheet 1 of 2)

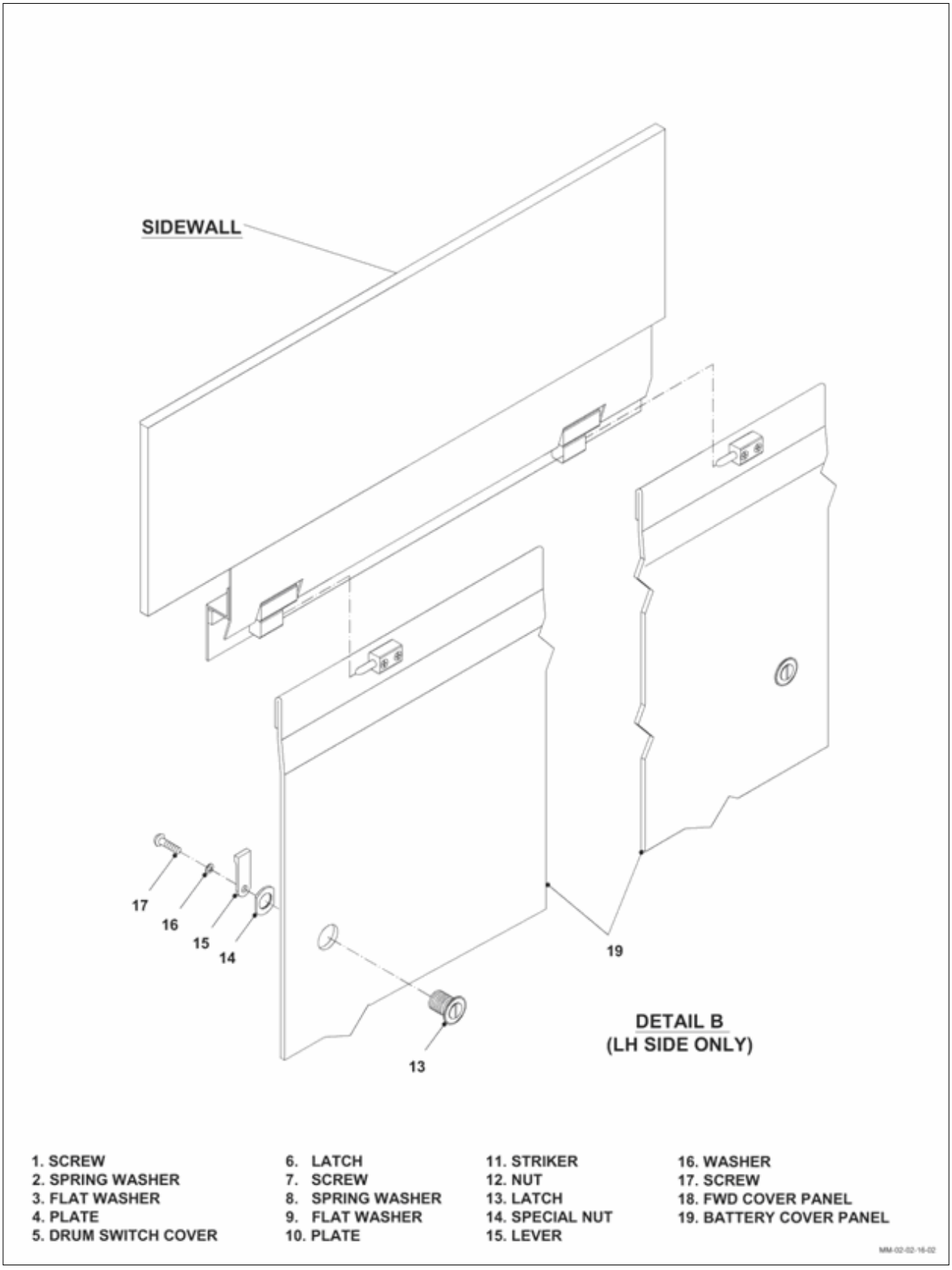


Figure 2-2.28 Maintenance Key Latches – Removal (Sheet 2 of 2)

2-2.6.e Cleaning/Painting

a) Cleaning

- **Reference Information.**

1. Tools /Equipment.
   - MBTA approved Cleaning Tools / Equipment (commercial).
   - Maintenance Key.
2. Material.
   - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).

Hinged Panels (FWD, Battery and Drum Switch Cover Panels)

- **Procedure.**

To Clean each Hinged Panel, proceed as follows:

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Using Maintenance Key open the panel and clean internal side / Maintenance Key latch using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

Bolted Panels

- **Procedure.**

To Clean each Bolted Panel, proceed as follows:

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Clean external side panels using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting

For Skirts/Spoiler Painting, refer to para 2-2.e.

2-2.6.f Inspection

- **Reference Information.**
  1. Tools /Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).

Hinged Panels (FWD, Battery and Drum Switch Cover Panels)

- **Procedure.**

  To Inspect each Hinged Panel proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect panels for damage/deformation and correct installation.
  4. Inspect latches for damage/deformation.
  5. Using the Maintenance Key verify the correct operation of the square key latch.
  6. Inspect paint for damage/corrosion.
  7. Inspect for corrosion between hinges and body structure.
  8. Inspect Covers Gasket for damage /deformation / watertight defects. Replace as necessary. Once the Gasket inspection / replacement is completed, apply a light coat of Vaseline gel onto the Gasket to protect it from Air / Road /Subway Tunnel contamination (as metallic dust).
  9. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

Bolted Panels

- **Procedure.**

  To Inspect each Bolted Panel proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.

2. Inspect panels for damage / deformation and correct installation.
3. Inspect paint for damage / corrosion.
4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.6.g Repair

Panels/Front End Panels seriously damaged should be replaced. To repair minorily damaged panels/front end panels , refer to para a) and b).

a) Panels

To repair each Panels, perform the following procedure:

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**
  1. Position the panel in horizontal plane onto a worktable which is equipped with locking devices.
  2. Operate the locking devices in order to lock the skirt on the worktable.
  3. In case of small dents, operate as follows:
     a. Make the back face of the panels plain, in order to restore the uniform surface.
     b. Perform the painting procedure. Refer to para **Error! Reference source not found.**.
  4. In case of damage (when the repair operation is cost-effective), operate as follows:
     a. Remove the damaged structural members of panel with a grinder cutter.
     b. Restore the uniform surface of the sheet using hammer and/or lifting device.
     c. Position the new structural members in the related seat and lock with welding clamp.
     d. Perform the welding nuggets by resistance spot welding or T.I.G./M.I.G. welding machine.
     e. Perform the painting procedure. Refer to para **Error! Reference source not found.**.

b) Front End Panels

To repair Front End Panels, operate as follows:

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**
  1. Minor scratches and cracks:
     a. The damaged surface must be cleaned and roughened.
     b. Prepare cracks by drilling a small hole at each end of the crack and scrape the crack into a shallow 'V' shape.
     c. Prepare polyester body putty with paste catalyzer: mix 100 parts putty with 10 parts catalyzer and generously fill the damaged part.

NOTE: Resin and catalyzer should not be mixed until necessary because mixture has a limited pot life (50 min approximately). Warming mixture reduces viscosity and aids handling, but shortens pot life of mixtures. In all cases, refer to resin manufacturer's instructions on use of resin.

Humidity/temperature limits on the following table are recommended for best results:

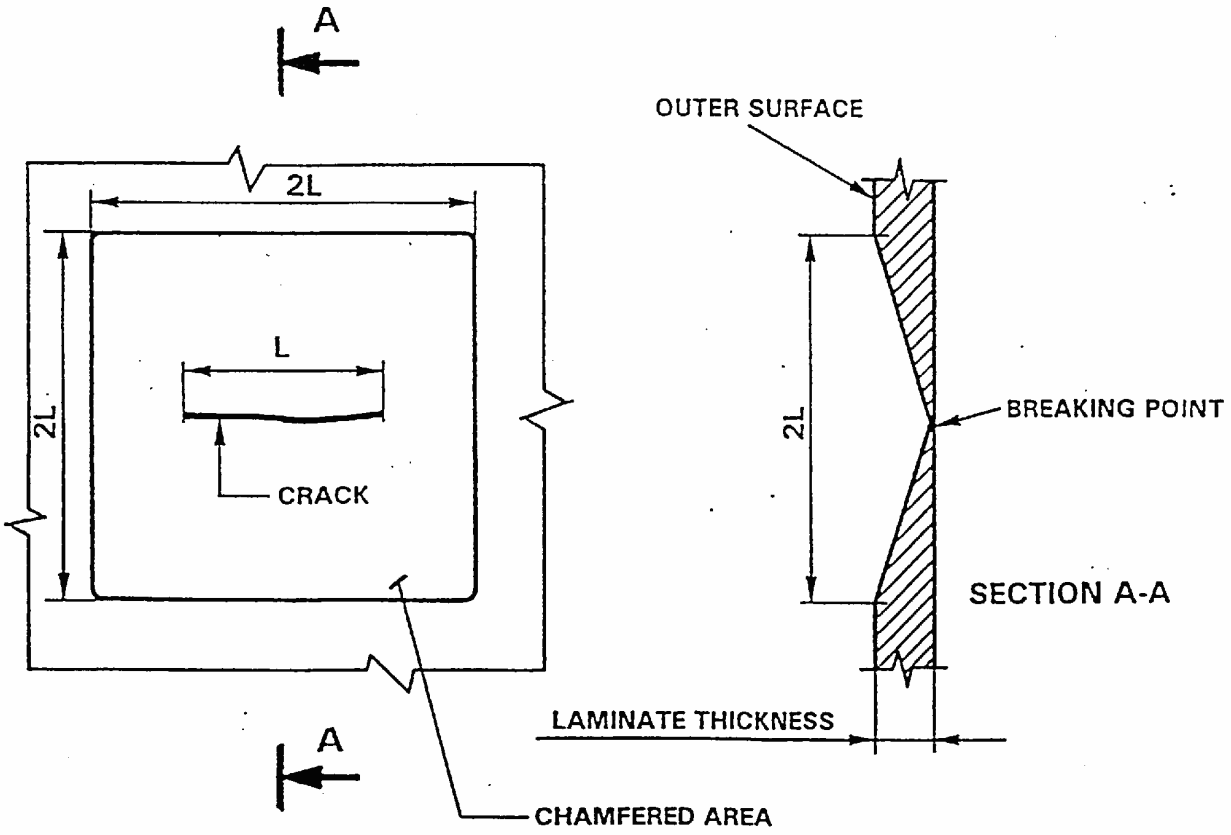
Humidity	**Ambient Temperature**	
(percent)	**(°F)**	**(°C)**
75	70	21
71	75	24
68	80	27
65	85	29
61	90	32
58	95	35
In any case, do not attempt to carry out any repair		

procedure if the ambient temperature is lower than 59℉ (15℃).

d. After polymerization has occurred, wet sand (with 400 grain sand paper) the surface until surface is smooth and flushes with the fiberglass, sanding is a preparation for the application of two coats of Gel-Coat each of 60 microns thickness.
e. No sanding is required between coats.

2. Burns:
   a. Remove all the Gel-Coat from the damaged surface down to the fiberglass (Mat), then proceed as described for minor scratches and cracks.
3. Breaks (Refer to Figure 2-2.29):
   a. In case of structural breaks, work from the inside of the damaged area.
   b. Clean down to the fiberglass and then apply three coats of Mat and catalyzer resin, gradually increasing the amount of surface that is covered.
   c. Upon completion of the coating and after perfect polymerization, proceed with repairing the visible portion as described for minor scratches and cracks.

Figure 2-2.29 Front End Panels - Repair



2-2.6.h Reassembly

The External Panels Installation procedure consists in the following main operations:

– Bolted Panels - Typical Installation.
– Hinged Panels (FWD, Battery and Drum Switch Cover Panels) - Typical Installation.
– Front End Panels (Upper and Lower) Installation
– Shell Moldings Installation
– Maintenance Key Latch (Drum Switch Cover Panels) Installation
– Maintenance Key Latch (FWD and Battery Cover Panel) Installation

a) Bolted Panels - Typical Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Bolted Panel, proceed as follows:

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position panel.
  3. Install Panel mounting bolts / rivets as necessary.

b) Hinged Panels (FWD, Battery and Drum Switch Cover Panels) - Typical Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Hinged Panel, proceed as follows (Refer to Figure 2-2.30):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

2. Hold up Hinged Panel (2, 4, 5).
3. Connect hinges (3) as shown in the figure.
4. Close panel.
5. Lock panel using Maintenance Key.

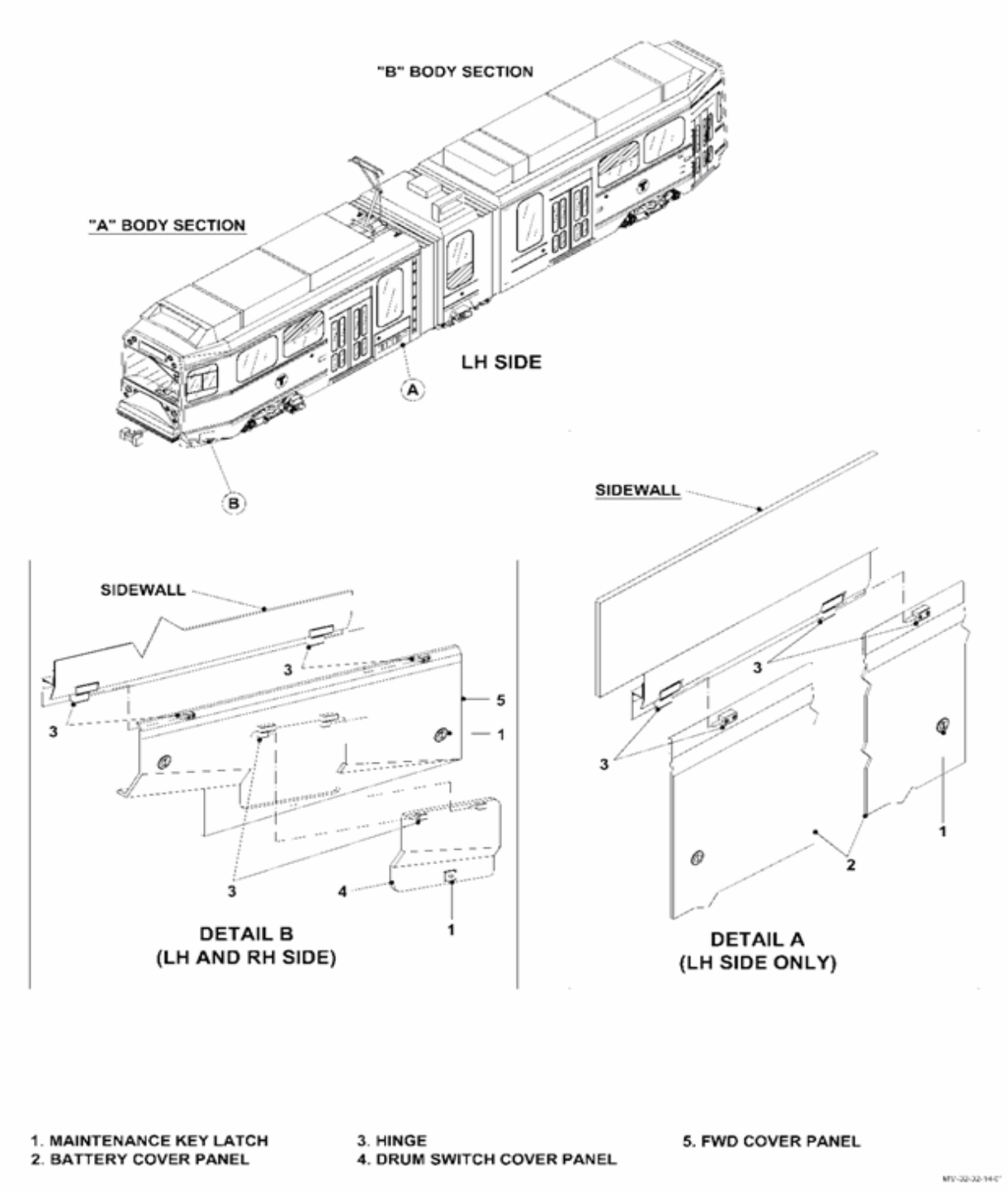


Figure 2-2.30 Hinged Panel (FWD, Battery and Drum Switch Cover Panels) – Typical Installation

c) Front End Panels (Upper and Lower) Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Front End Panel, proceed as follows (Refer to Figure 2-2.31):

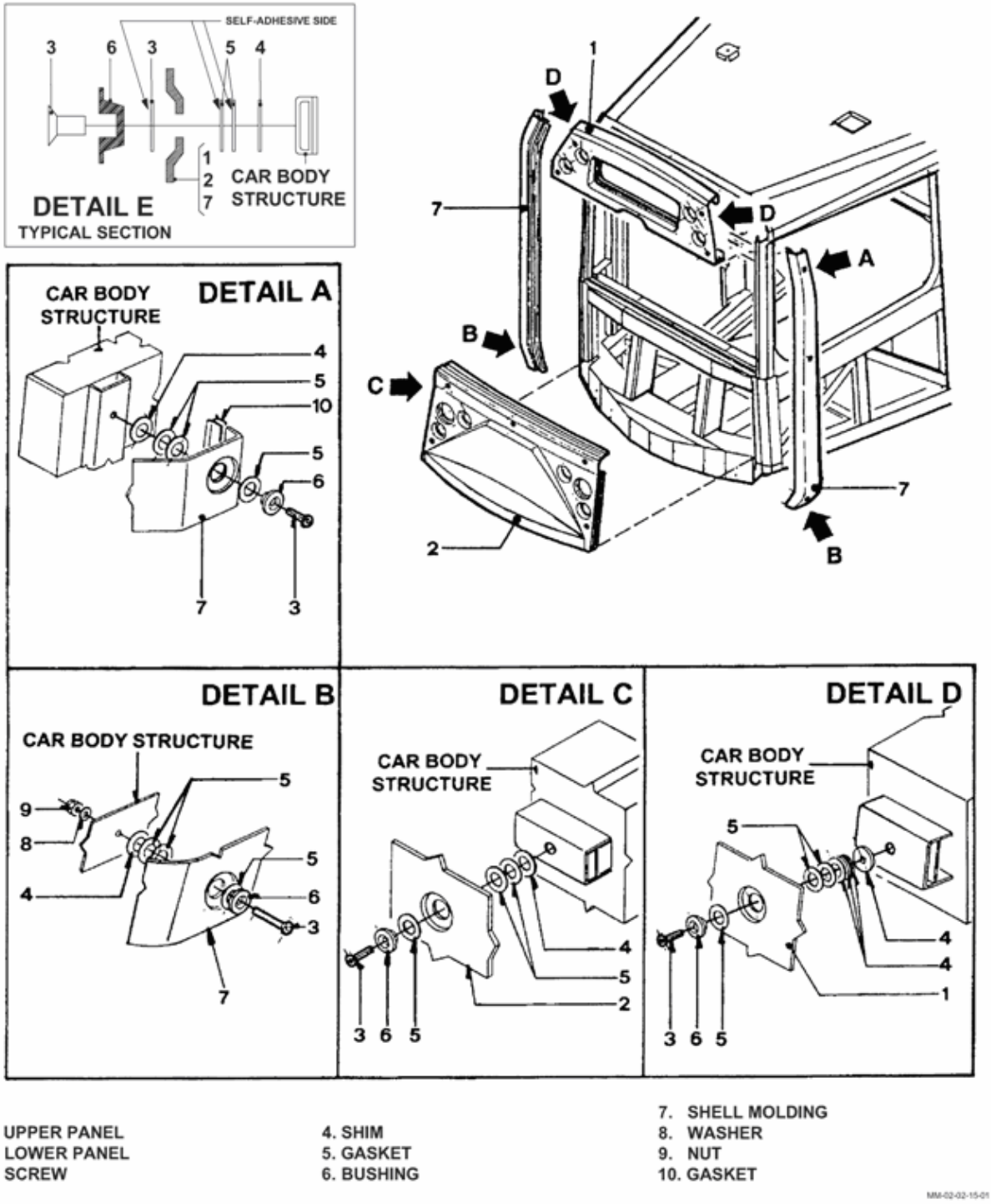
  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Check that rubber gasket is in good condition. Replace if necessary and apply as shown in the typical detail.
  3. Insert screws (3), shims (4), bushings (6) into the panel.
  4. Position panel.
  5. Tighten screws (3) to **7 lb-ft (9.5 Nm)**.

d) Shell Moldings Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Shell Molding, proceed as follows (Refer to Figure 2-2.31):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the rubber gaskets (10) and shims (4) from adhesive tape.
  3. Check that rubber gasket (10) is in good condition. Replace if necessary and apply as shown in the typical detail.
  4. Insert: screw (3), bushing (6), gasket (5), shim (4) into the shell molding (7).
  5. Install the molding in proper position.
  6. Insert washer (8) and nut (9) to the lower fastening.
  7. Tighten the screws (3) to **7 lb-ft (9.5 Nm)**.



1. UPPER PANEL
2. LOWER PANEL
3. SCREW
4. SHIM
5. GASKET
6. BUSHING
7. SHELL MOLDING
8. WASHER
9. NUT
10. GASKET

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Figure 2-2.31 Front End Panels and Shell Moldings– Installation

e) Maintenance Key Latch (Drum Switch Cover Panels) Installation

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Drum Switch Cover Panel Latch, proceed as follows (Refer to Figure 2-2.32, Detail A):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the latch installation seat.
  3. Position the latch and install the attaching parts.
  4. Install Drum Switch Cover Panel (Refer to para 2-2.6.h b)).
  5. Close the panels and lock it using the Maintenance key. As necessary adjust the latch clearance (Refer to para 2-2.6.h e)).

f) Maintenance Key Latch (FWD and Battery Cover Panel) Installation

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install FWD and Battery Cover Panel Latch, proceed as follows (Refer to Figure 2-2.32, Detail B):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the latch installation seat.
  3. Position the latch and install the attaching parts.
  4. Install FWD and Battery Cover Panel (Refer to para 2-2.6.h b)).
  5. Close the panels and lock it using the Maintenance key. As necessary adjust the latch clearance (Refer to para 2-2.6.h f)).

2-2.6.i Adjustment/Test (Not Applicable)

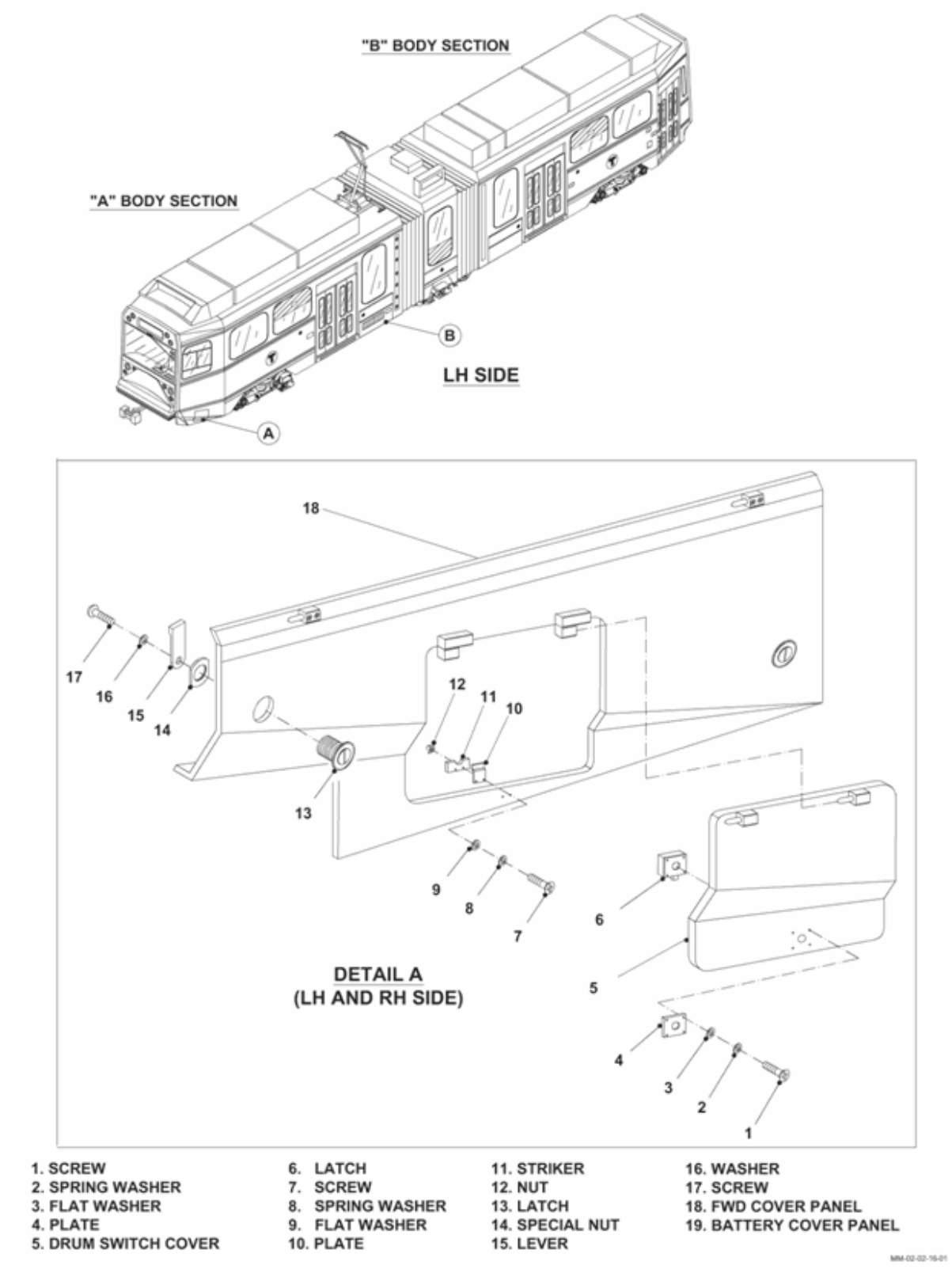
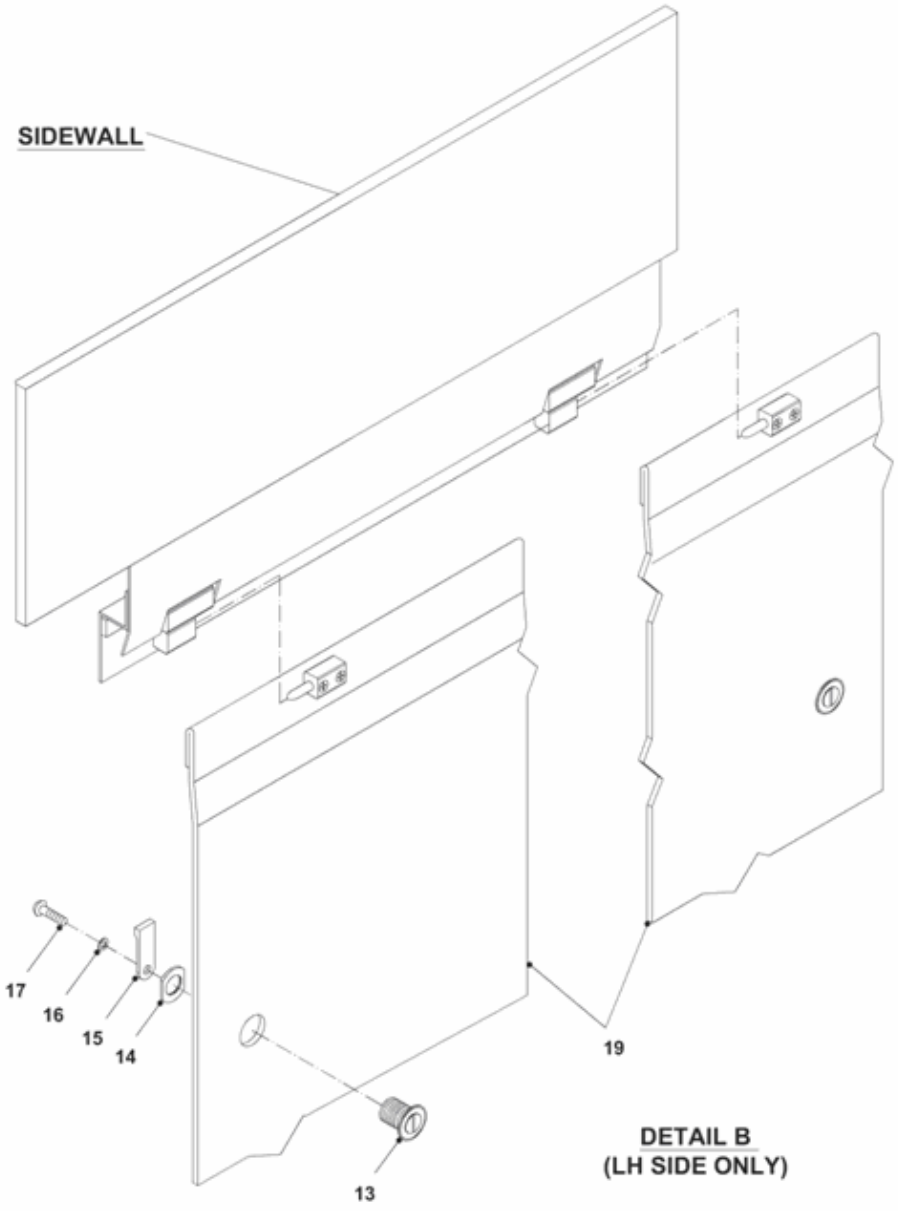


Figure 2-2.32 Maintenance Key Latches – Installation (Sheet 1 of 2)



1. SCREW
2. SPRING WASHER
3. FLAT WASHER
4. PLATE
5. DRUM SWITCH COVER
6. LATCH
7. SCREW
8. SPRING WASHER
9. FLAT WASHER
10. PLATE
11. STRIKER
12. NUT
13. LATCH
14. SPECIAL NUT
15. LEVER
16. WASHER
17. SCREW
18. FWD COVER PANEL
19. BATTERY COVER PANEL

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Figure 2-2.32 Maintenance Key Latches – Installation (Sheet 2 of 2)

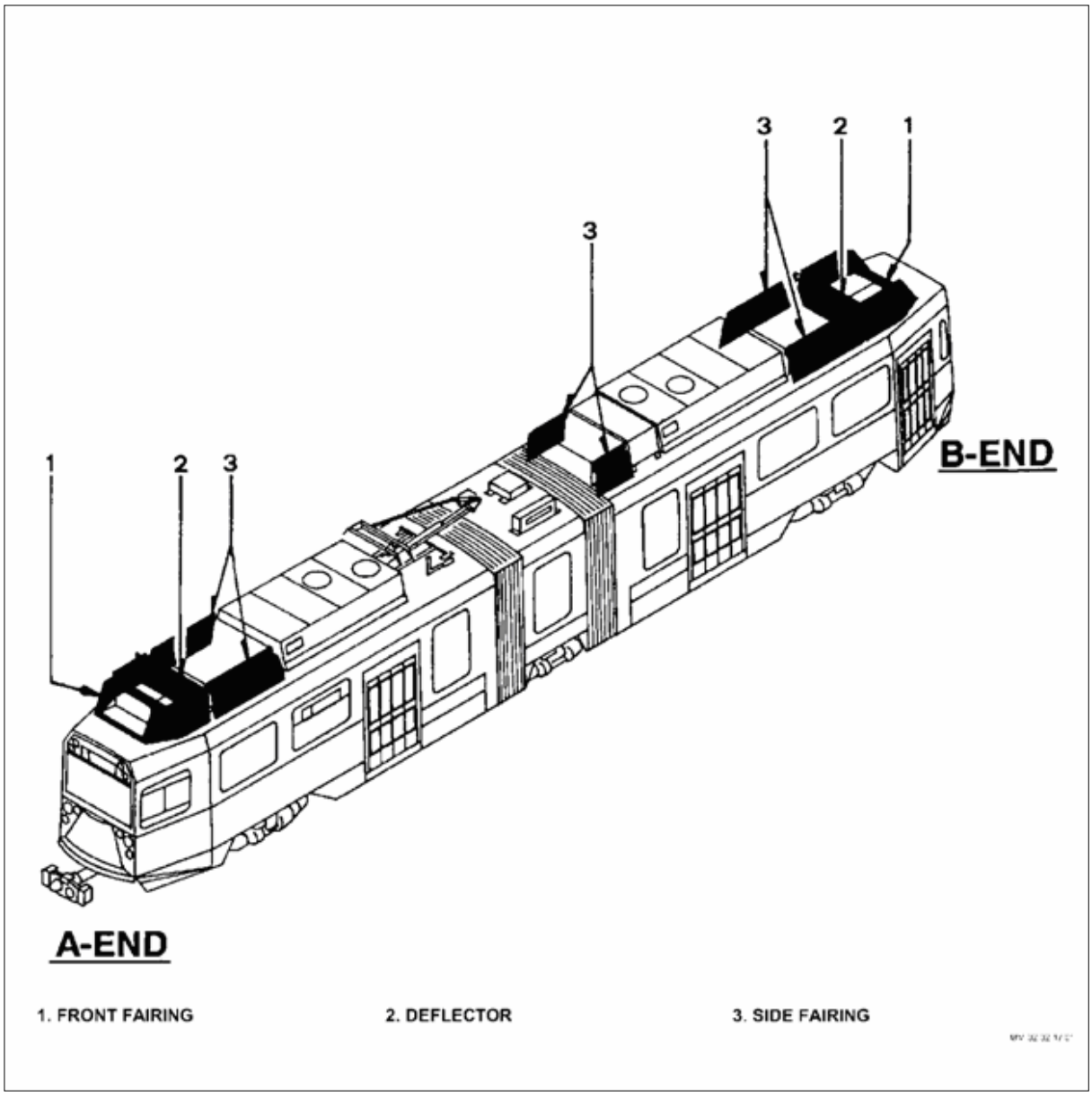
2-2.7 Fairings and Deflectors

2-2.7.a Description and Theory of Operation

The vehicle is provided with two Front Fairings, six Side Fairings (1) and two Deflectors (2) (Refer to Figure 2-2.33).

The Fairings are fixed on the roof to hide and protect the equipments installed over the "A" and "B" car body sections.

Fairings and deflector are made with 5052-H34 light alloy and are bolted to support the



equipment installed on the roof.

Figure 2-2.33 Fairings and Deflector - Location

2-2.7.b Specific Safety Precautions

WARNING: **BEFORE CLIMBING ON THE ROOF, TO PERFORM FAIRINGS AND DEFLECTOR MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

2-2.7.c Fault Isolation

For Fairings/Deflectors Fault Isolation procedure, refer to Table 2-2.10.

Table 2-2.10 Fairings/Deflectors - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Fairings/Deflectors attaching parts loose.	1. Vibration.	1. Fasten.
2. Fairings/Deflectors damaged.	1. Seriously damaged.	1. Replace (Refer to para 2-2.7.d).
	2. Not seriously damaged.	1. Repair (Refer to para 2-2.7.g).

2-2.7.d Disassembly

The Fairings and Deflector Removal procedure consists in the following main operations:

– Front Fairing Removal.

– Side Fairing Removal.

– Deflector Removal.

WARNING: **BEFORE CLIMBING ON THE ROOF, TO PERFORM FAIRINGS AND DEFLECTOR MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE REMOVAL PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

a) Front Fairing Removal

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Eye Bolts, Q.ty 4.
     - Overhead Crane and Lifting Device (min. capacity 100 Lb).
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Front Fairing, proceed as follows (Refer to Figure 2-2.34):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:

a. Lock the Catenary Isolating Switch in the open position.
b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
c. Apply Wheel Chocks.

2. Remove screws (19), washers (20), spring washers (21) and nuts (22) from plate (23) (front side).
3. Remove screws (2), and washers (3, 4).

WARNING:	**FRONT FAIRING WEIGHS 26.6 LB (12.1 KG). DURING THE REMOVAL PROCEDURE MAKE SURE THAT LIFTING DEVICE SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

4. Install four eye bolts in the fairing installation points (upper side).
5. Secure Front Fairing (1) to a suitable lifting device.
6. Lift fairing and remove it from the vehicle roof.
7. Remove washers (4) and insulators (5).

b) Side Fairing Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Eye Bolts, Q.ty 2.
   - Overhead Crane and Lifting Device (min. capacity 100 Lb).
2. Material (Not Applicable).

- **Procedure.**

To Remove each side Fairing, proceed as follows (Refer to Figure 2-2.34):

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
2. Remove screws (19), washers (20), spring washers (21) and nuts (22) from plate (23) (rear side) (Detail D).
3. Remove screws (6, 11), spring washers (7, 12) and washers (8, 13).
4. Install two eye bolts in the fairing installation points (upper side).

5. Secure Side Fairing (10) to a suitable lifting device.
6. Lift fairing and remove it from the vehicle roof.
7. Remove rubber spacers (9).
8. Remove screws (14), washers (15), spring washers (16) and nuts (17).
9. Remove support (18).

c) Deflector Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Eye Bolts, Q.ty 2.
   - Overhead Crane and Lifting Device (min. capacity 100 Lb).
2. Material (Not Applicable).

- **Procedure.**

To Remove each Deflector , proceed as follows (Refer to Figure 2-2.35):

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: <u>PEOPLE WORKING</u> ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
2. Remove bolts (1), washers (2, 3).
3. Remove bolts (4), washers (5, 6).

<u>WARNING:</u>	**DEFLECTOR WEIGHS 23.8 LB (10.8 KG). DURING THE REMOVAL PROCEDURE MAKE SURE THAT LIFTING DEVICE SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

4. Install two eye bolts in the deflector installation points (upper side).
5. Secure Deflector (7) to a suitable lifting device.
6. Lift deflector and remove it from the vehicle roof.
7. Remove washers (8) and insulators (9).

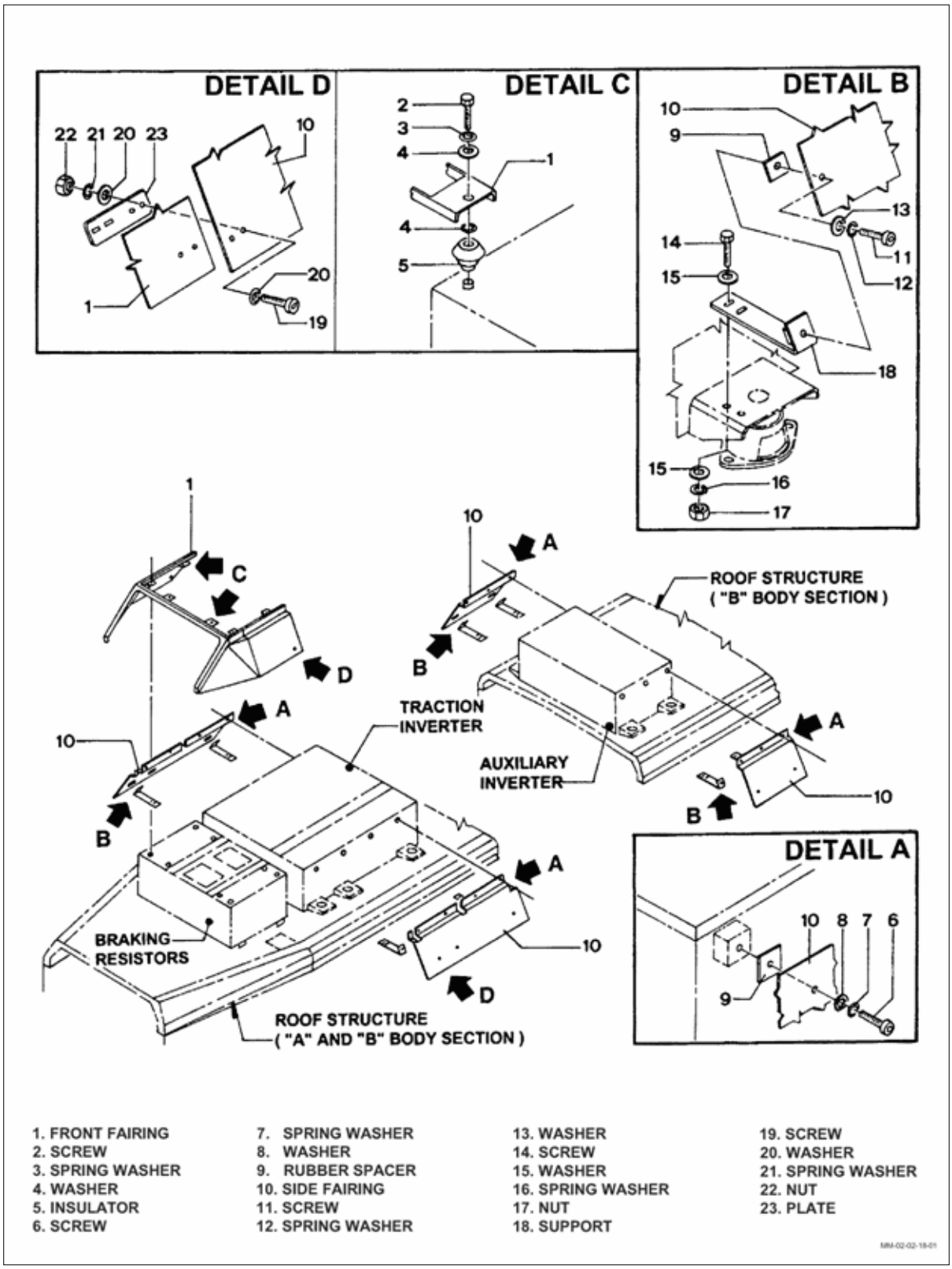


Figure 2-2.34 Fairings - Typical Removal

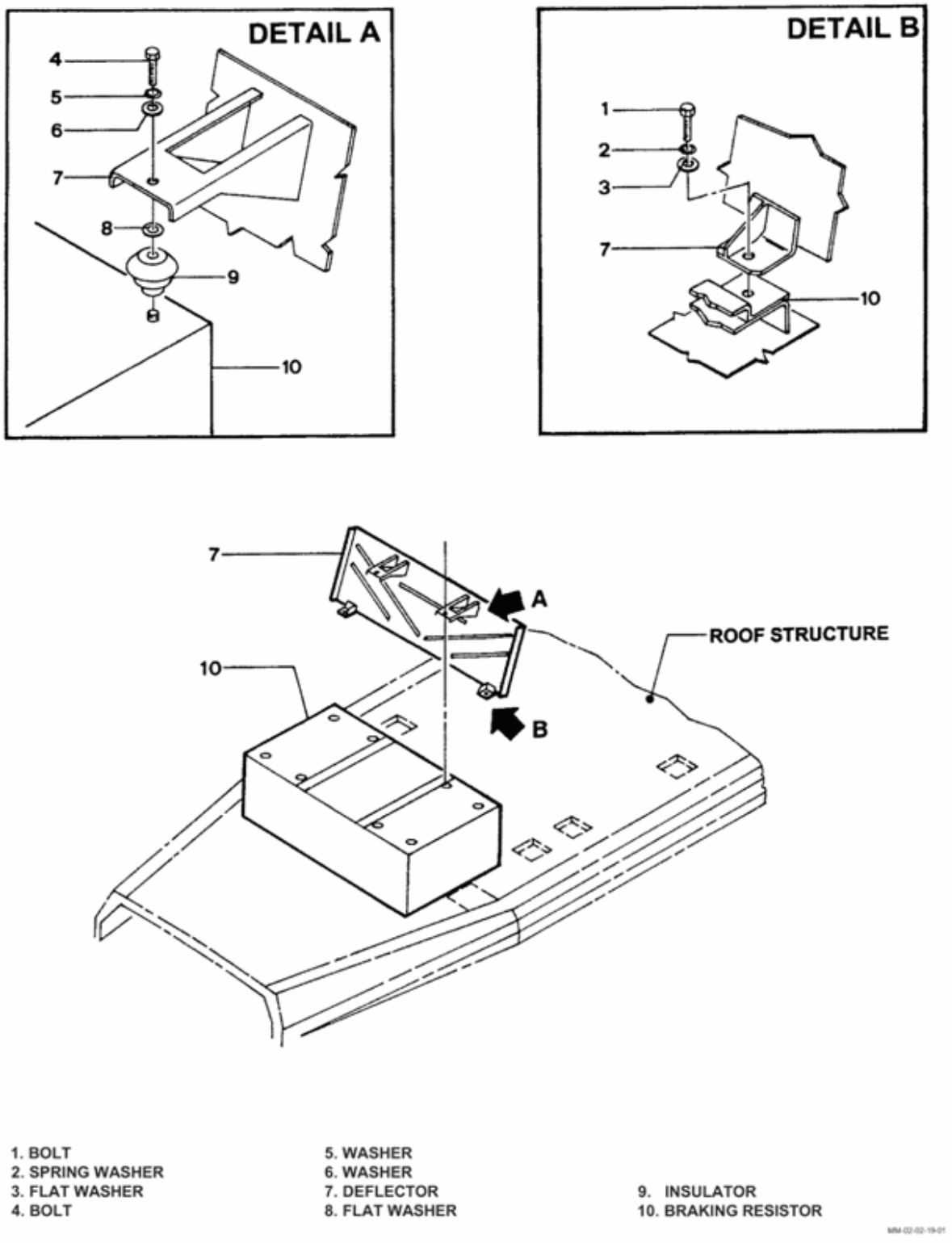


Figure 2-2.35 Deflector – Typical Removal

2-2.7.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
     - Wheel Chocks.
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To clean each Fairing and Deflector, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
     a. Lock the Catenary Isolating Switch in the open position.
     b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
     c. Apply Wheel Chocks.
  2. Clean Fairings/Deflectors using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting

To paint Fairings and Deflectors refer to para 2-2.e.

2-2.7.f Inspection

- **Reference Information.**
  1. Tools / Equipment.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Fairings and Deflectors proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
     a. Lock the Catenary Isolating Switch in the open position.

b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
c. Apply Wheel Chocks.

2. Inspect Fairings/Deflectors for damage/deformation.
3. Inspect paint for damage/corrosion.
4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-2.7.g Repair

Fairings and Deflector seriously damaged should be replaced.
To repair minorily damaged fairings and deflectors, proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**
  1. Position the fairing or deflector onto a worktable which is equipped with locking devices.
  2. Operate the locking devices in order to lock the skirt on the worktable.
  3. In case of small dents, operate as follows:
     a. Make the back face of the panels plain in order to restore the uniform surface.
     b. Perform the painting procedure. Refer to para **Error! Reference source not found.**.
  4. In case of damage (when the repair operation is cost-effective), operate as follows:
     a. Remove the damaged structural members of panel with a grinder cutter
     b. Restore the uniform surface of the sheet with hammer and/or lifting device.
     c. Position the new structural members in the related seat and lock with welding clamp.
     d. Perform the welding nuggets by resistance spot welding or T.I.G./M.I.G. welding machine.
     e. Perform the painting procedure. Refer to para **Error! Reference source not found.**.

2-2.7.h Reassembly

The Fairings and Deflector Installation procedure consists in the following main operations:

– Front Fairing Installation.

– Side Fairing Installation.

– Deflector Installation.

WARNING: **BEFORE CLIMBING ON THE ROOF, TO PERFORM FAIRINGS AND DEFLECTOR MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE INSTALLATION PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

a) Front Fairing Installation

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Eye Bolts, Q.ty 4.
     - Overhead Crane and Lifting Device (min. capacity 100 Lb).
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Front Fairing, proceed as follows (Refer to Figure 2-2.36):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

WARNING:	**FRONT FAIRING WEIGHS 26.6 LB (12.1 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE THAT LIFTING DEVICE SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2. Install four eye bolts in the fairing installation points (upper side).
3. Connect Front Fairing (1) to a suitable lifting device.
4. Position insulators (5) and washers (4).
5. Lift Front Fairing (1) and position it in proper position on the vehicle roof.
6. Install washers (3, 4), and screws (2).
7. Tighten screws (2) to **25 lb-ft (33,3 Nm)**.
8. Install screws (19), washers (20), spring washers (21) and nuts (22) on plate (23) (front side).
9. Tighten nuts (22) to **7.2 lb-ft (9.8 Nm)**.

b) Side Fairing Installation

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Eye Bolts, Q.ty 2.
   - Overhead Crane and Lifting Device (min. capacity 100 Lb).
2. Material (Not Applicable).

- **Procedure.**

To Install each side Fairing, proceed as follows (Refer to Figure 2-2.36):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Install support (18) in proper position.
3. Install nuts (17), spring washers (16), washers (15) and screws (14).
4. Tighten screws (14) to **4,6 lb-ft (6,3 Nm)**.
5. Install two eye bolts in the fairing installation points (upper side).
6. Connect Side Fairing (10) to a suitable lifting device.

7. Position rubber spacers (9).
8. Lift Side Fairing (10) and position it in proper position on the vehicle roof.
9. Install washer (8, 13), spring washer (7, 12) and screw (6, 11).
10. Install screws (19), washers (20), spring washers (21) and nuts (22) on plate (23) (front side).
11. Tighten screws (6, 11) to **7.2 lb-ft (9.8 Nm)**.
12. Tighten nuts (22) to **7.2 lb-ft (9.8 Nm)**.

c) Deflector Installation

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Eye Bolts, Q.ty 2.
   - Overhead Crane and Lifting Device (min. capacity 100 Lb).
2. Material (Not Applicable).

- **Procedure.**

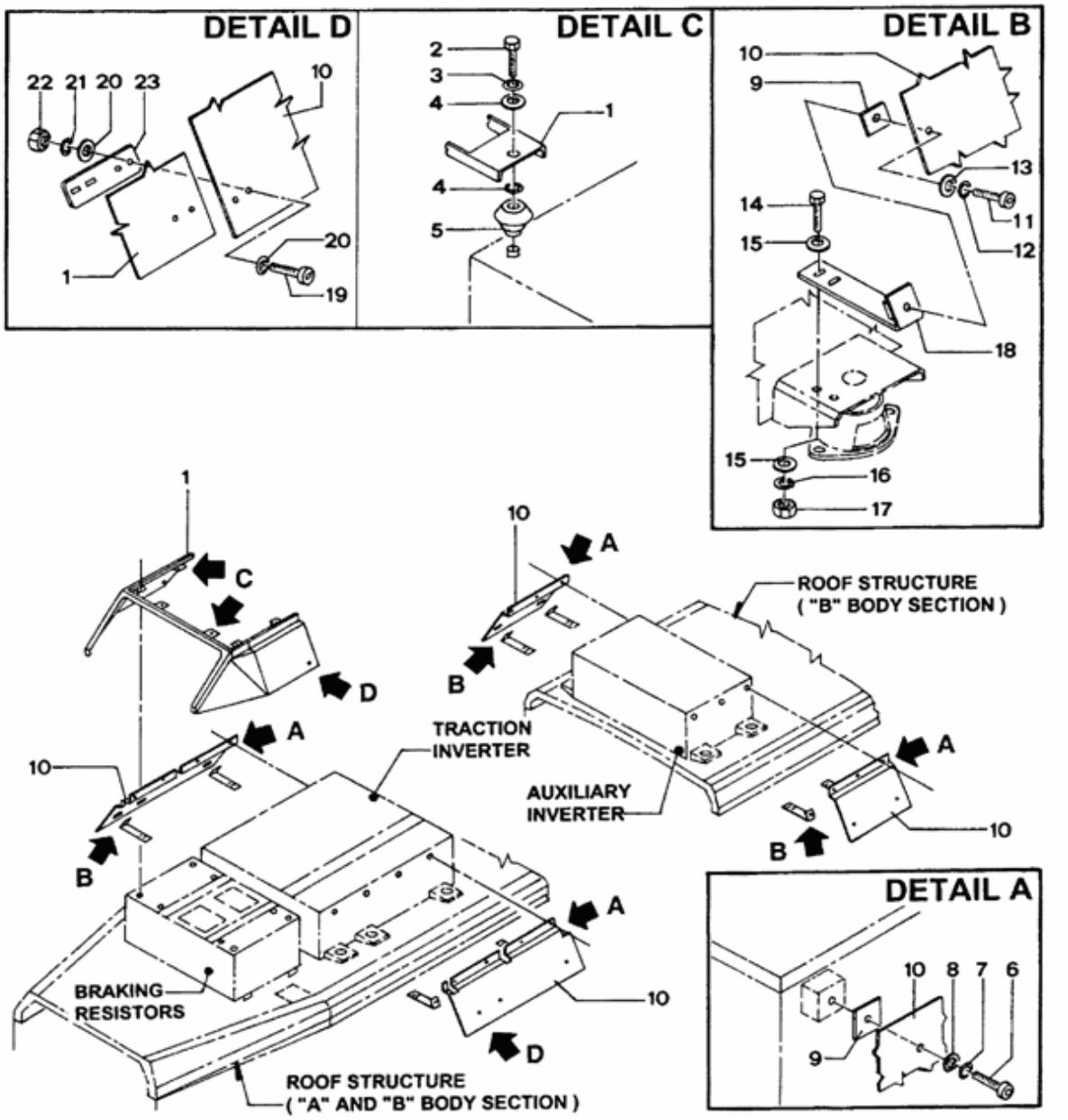
To Install each Deflector , proceed as follows (Refer to Figure 2-2.37):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

WARNING:	**DEFLECTOR WEIGHS 23.8 LB (10.8 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE THAT LIFTING DEVICE SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2. Install two eye bolts in the fairing installation points (upper side).
3. Connect Deflector (7) to a suitable lifting device.
4. Position insulators (9) and washers (8).
5. Lift Deflector (7) and position it in proper position on the vehicle roof.
6. Install washers (5, 6), and bolts (4).
7. Install washers (2, 3), and bolts (1).
8. Tighten bolts (1) to **29 lb-ft (38.7 Nm)**.
9. Tighten bolts (4) to **25 lb-ft (33.3 Nm)**.

2-2.7.i Adjustment/Test (Not Applicable)



1. FRONT FAIRING
2. SCREW
3. SPRING WASHER
4. WASHER
5. INSULATOR
6. SCREW
7. SPRING WASHER
8. WASHER
9. RUBBER SPACER
10. SIDE FAIRING
11. SCREW
12. SPRING WASHER
13. WASHER
14. SCREW
15. WASHER
16. SPRING WASHER
17. NUT
18. SUPPORT
19. SCREW
20. WASHER
21. SPRING WASHER
22. NUT
23. PLATE

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Figure 2-2.36 Fairings - Typical Installation

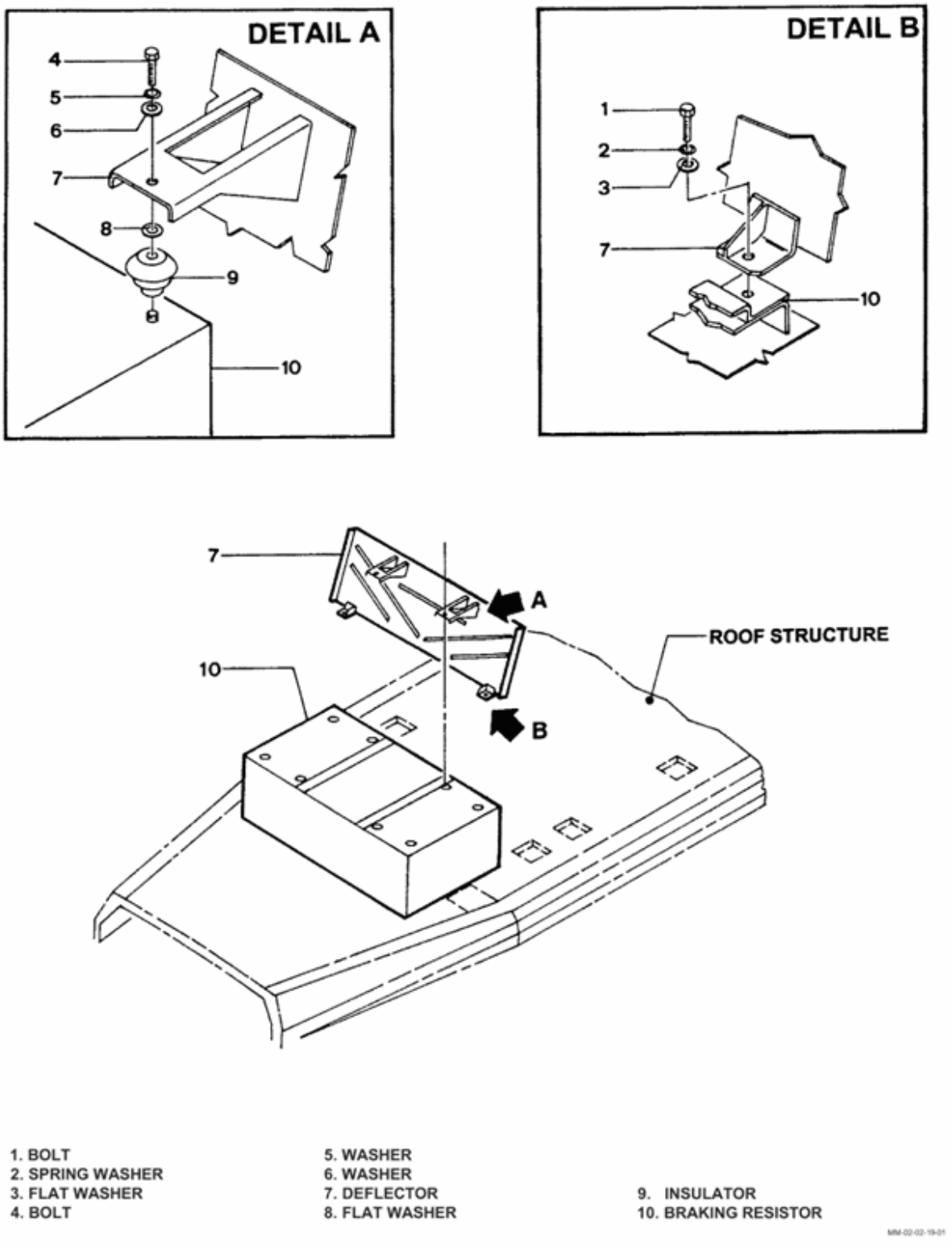


Figure 2-2.37 Deflector – Typical Installation

2-3 Interior

2-3.a Description and Theory of Operation

The vehicle's Interior (Refer to Figure 2-3.1) has been designed using materials, colors and layout in order to facilitate cleaning operations and to provide the passengers comfort and safety. Elderly/handicapped accommodations are provided; the available space has been optimized to facilitate the access to wheel chairs.

Any non-metallic interior components are made with low flammability, low smoke emission, high-gloss and graffiti-resistant materials. The vehicle main interior components are: Stanchions, Handrails, Liners, Entrance Walls, Passenger Seats, Floor, Air Conditioning Grids, Filters, Access Doors to Equipment Controls, Communications, Tape Switches etc.

NOTE: For Operator's Cab Interiors, refer to para 2-3.6.

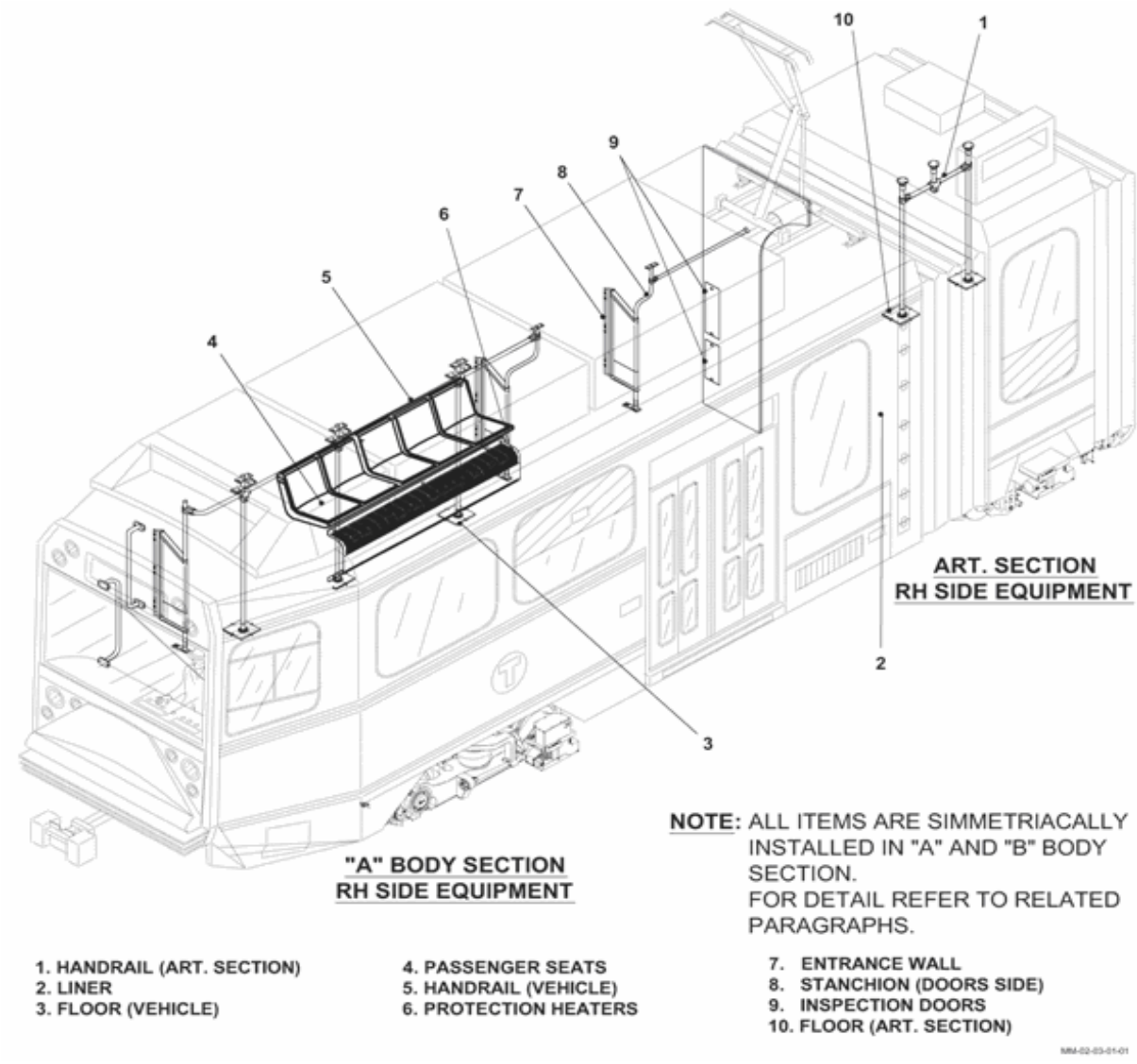


Figure 2-3.1 Interior - Components (Sheet 1 of 2)

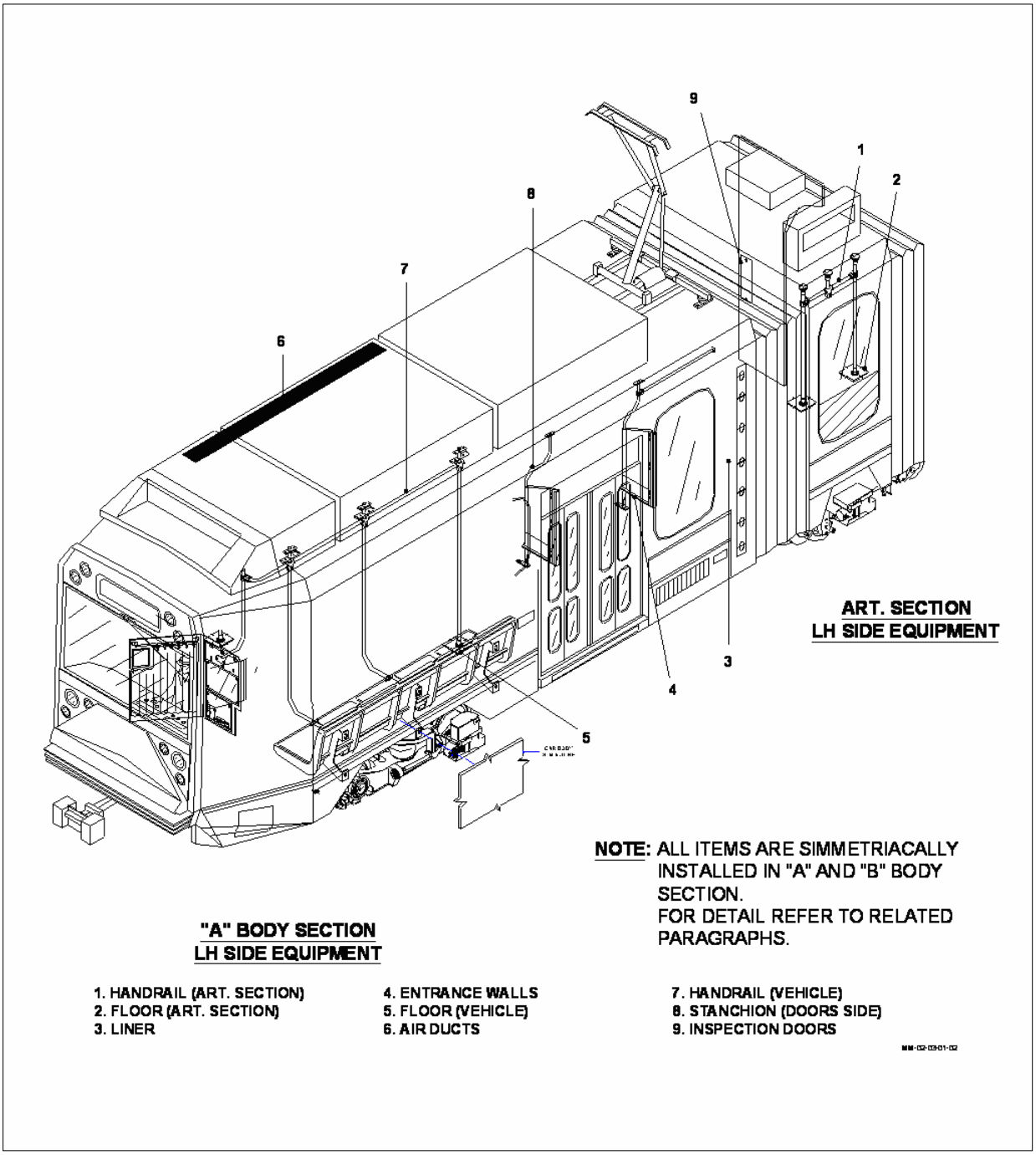


Figure 2-3.1 Interior - Components (Sheet 2 of 2)

2-3.b Specific Safety Precaution

Since the Vehicle interior consists of separate items, the "Interior" Specific Safety Precautions are described in the para(s) related to each item.

2-3.c Fault Isolation

Since the Vehicle Interior consists of separate items, the Fault Isolation is described in the para(s) related to each item, as shown in Table 2-3.1.

Table 2-3.1 Interior Components - Fault Isolation

COMPONENTS	REFERENCE (Para)
Stanchions and Handrails	2-3.1.e
Liner and Ceiling Panels	2-3.2.e
Entrance Walls	2-3.3.e
Passenger Seats	2-3.4.e
Floor	2-3.5.e
Inspection Doors	2-3.6.e
Air Ducts	2-3.7.e
Heater Protections	2-3.8.e

2-3.d Disassembly

Since the Vehicle Interior consists of separate items, the Disassembly is described in the para(s) related to each item, as shown in Table 2-3.2.

Table 2-3.2 Interior Components - Disassembly

COMPONENTS	REFERENCE (Para)
Stanchions and Handrails	Not Applicable
Liner and Ceiling Panels	Not Applicable
Entrance Walls	Not Applicable
Passenger Seats	2-3.4.d
Floor	Not Applicable
Inspection Doors	2-3.6.d
Air Ducts	2-3.7.e
Heater Protections	2-3.8.e

2-3.e Cleaning/Painting

Since the Vehicle Interior consists of separate items, the Cleaning/Painting is described in the para(s) related to each item, as shown in Table 2-3.3.

Table 2-3.3 Interior Components - Cleaning/Painting

COMPONENTS	CLEANING REFERENCE (Para)	PAINTING REFERENCE (Para)
Stanchions and Handrails	2-3.1.e a)	Not Applicable
Liner and Ceiling Panels	2-3.2.e a)	2-3.2.e b)
Entrance Walls	2-3.3.e a)	2-3.3.e b)
Passenger Seats	2-3.4.e a)	2-3.4.e b)
Floor	2-3.5.e a)	Not Applicable
Inspection Doors	2-3.6.e a)	Not Applicable
Air Ducts	2-3.7.e a)	Not Applicable
Heater Protections	2-3.8.e a)	Not Applicable

2-3.f Inspection

Since the Vehicle Interior consists of separate items, the Inspection is described in the para(s) related to each item, as shown in Table 2-3.4.

Table 2-3.4 Interior Components - Inspection

COMPONENTS	REFERENCE (Para)
Stanchions and Handrails	2-3.1.f
Liner and Ceiling Panels	2-3.2.f
Entrance Walls	2-3.3.f
Passenger Seats	2-3.4.f
Floor	2-3.5.f
Inspection Doors	2-3.6.f
Air Ducts	2-3.7.f
Heater Protections	2-3.8.f

2-3.g Repair

Since the Vehicle Interior consists of separate items, the Repair is described in the para(s) related to each item, as shown in Table 2-3.5.

Table 2-3.5 Interior Components - Repair

COMPONENTS	REFERENCE (Para)
Stanchions and Handrails	2-3.1.g
Liner and Ceiling Panels	2-3.2.g
Entrance Walls	2-3.3.g
Passenger Seats	2-3.4.g
Floor	2-3.5.g
Inspection Doors	2-3.6.g
Air Ducts	2-3.7.g
Heater Protections	2-3.8.g

2-3.h Reassembly

Since the Vehicle Interior consists of separate items, the Reassembly is described in the para(s) related to each item, as shown in Table 2-3.6.

Table 2-3.6 Interior Components - Reassembly

COMPONENTS	REFERENCE (Para)
Stanchions and Handrails	Not Applicable
Liner and Ceiling Panels	Not Applicable
Entrance Walls	Not Applicable
Passenger Seats	2-3.4.i
Floor	Not Applicable
Inspection Doors	2-3.6.i
Air Ducts	2-3.7.i
Heater Protections	2-3.8.i

2-3.i Adjustment/Test (Not Applicable)

2-3.1 Stanchions and Handrails

2-3.1.a Description and Theory of Operation

The vehicle is equipped with Stanchions and Handrails (Refer to Figure 2-3.2) to facilitate safety on board during passenger circulation, and to provide standee assistance. The stanchions are installed at each side of each door and in proper position with passenger seats. The handrails, connected to stanchions, are installed at LH and RH side of the vehicle aisle and at each side of the Articulation Section. Stanchions and hand rails are made of 1-1/4 in. DIA stainless steel tubing with stainless steel fittings, free of burs and sharp edges. Additional hand rails made of stainless steel are installed: one on the cab dividing wall, two to help passengers from low to high floor and one located aside of the passenger door near the operator cab.

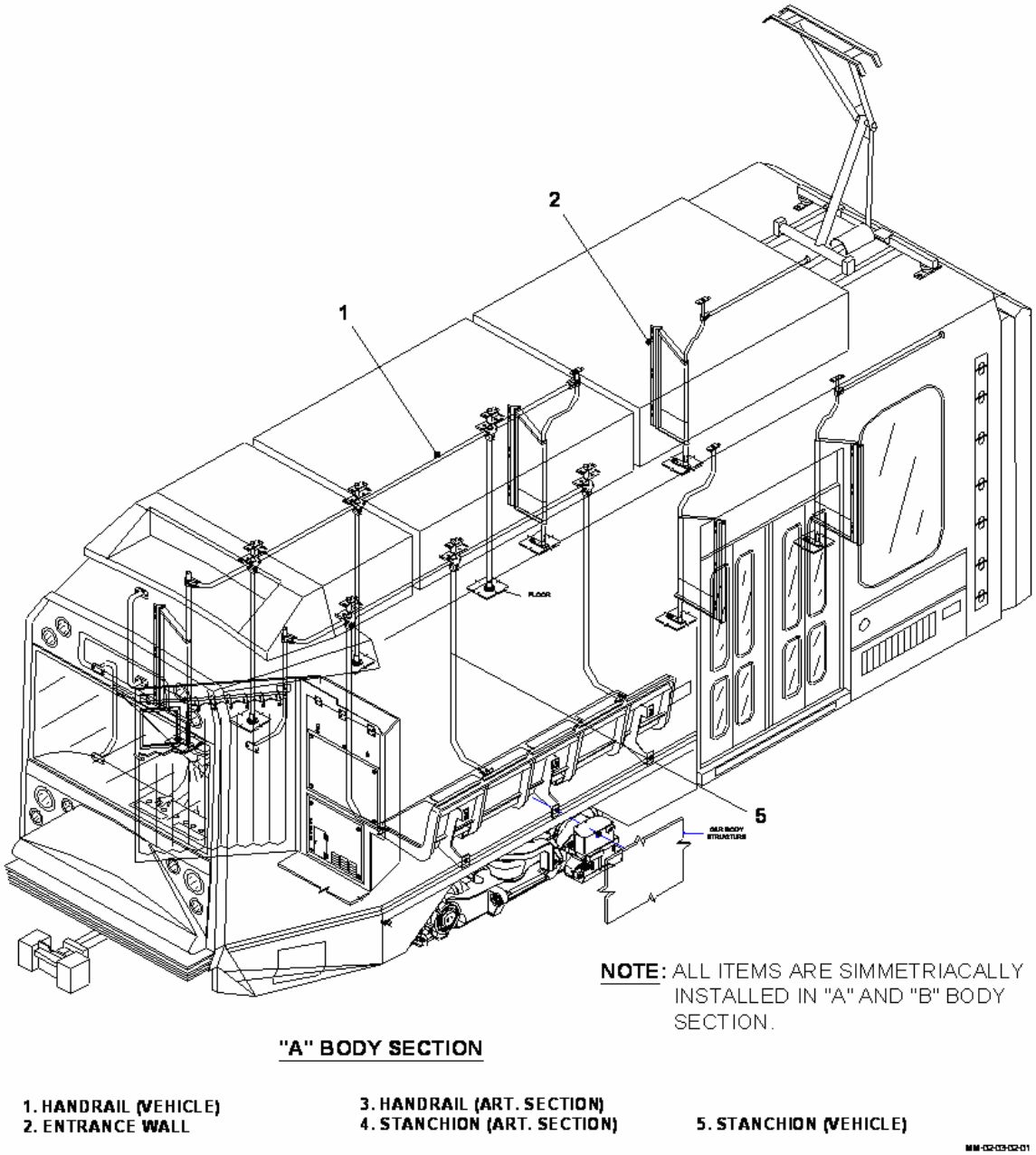


Figure 2-3.2 Stanchions and Handrails – Location (Sheet 1 of 2)

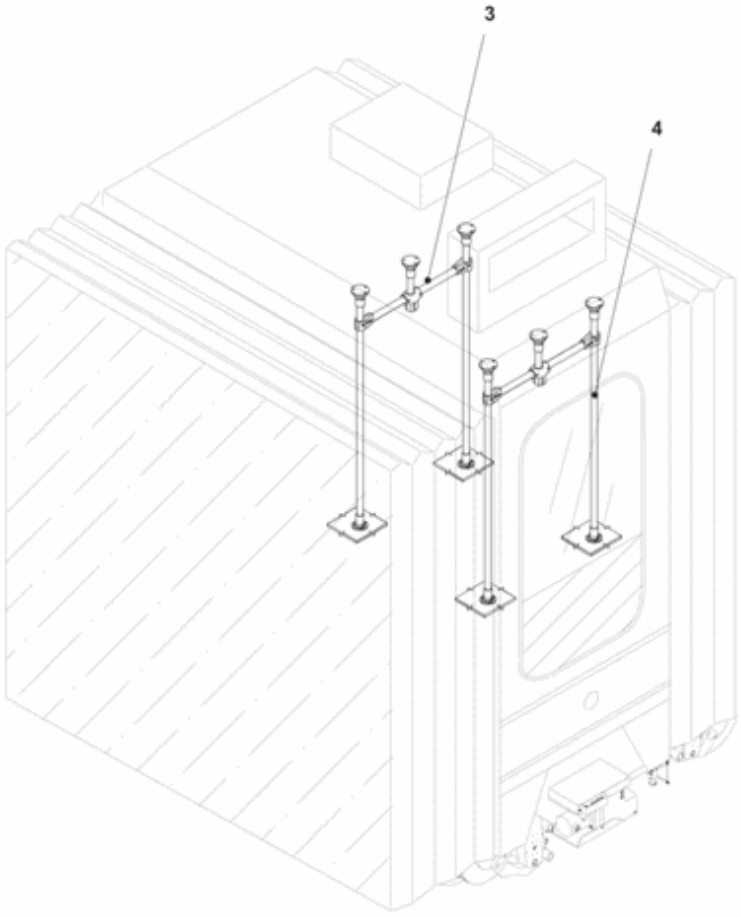


Figure 2-3.2 Stanchions and Handrails – Location (Sheet 2 of 2)

2-3.1.b Specific Safety Precautions (Not Applicable)

2-3.1.c Fault Isolation

For Stanchion and Handrail Fault Isolation procedure, refer to Table 2-3.7.

Table 2-3.7 Stanchion and Handrail - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Stanchions / Handrails / loose.	1. Vibrations.	1. Fasten.
2. Stanchions/Handrails damaged.	1. Vandalism.	1. Replace (Refer to para 2-3.1.d).

2-3.1.d Disassembly

The Stanchions and Handrails Disassembly procedure consists in the following main operations:

- Handrail, "A", "B" and Articulation Section - Typical Removal.
- Handrail, Next Operator Cab and Cab Dividing Wall Removal.
- Handrail, between Low Floor and High Floor Removal.
- Stanchion, Fixed to the Passenger Seats Removal.
- Stanchion, Fixed to the Floor Removal.
- Stanchion, Fixed to the Floor (Articulation Section) Removal.
- Stanchions with Entrance Walls Removal.
- Handrail with Passenger Emergency Intercom Box Removal.

a) Handrail, "A", "B" and Articulation Section - Typical Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Handrail, proceed as follows (Refer to Figure 2-3.3):

  1. Remove each junction (2) as follows:

a. Remove screws (5), and special nuts (6).
b. Remove junctions (2).

2. Remove Handrail (1 or 3).

b) Handrail, Next Operator Cab and Cab Dividing Wall Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Remove each Handrail located next the Operator Cab and Cab Dividing Wall, proceed as follows (Refer to Figure 2-3.3):

1. Support handrail by hand and remove the related mounting screws (9).
2. Remove Handrail (8).

c) Handrail, between Low Floor and High Floor Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Remove each Handrail, between Low Floor and High Floor, proceed as follows (Refer to Figure 2-3.3):

1. Remove screws (5) and special nuts (6) from upper side.
2. Remove junction (2, 4) from the stanchion (7).
3. Remove mounting screw from lower side.
4. Remove handrail (1 or 3).

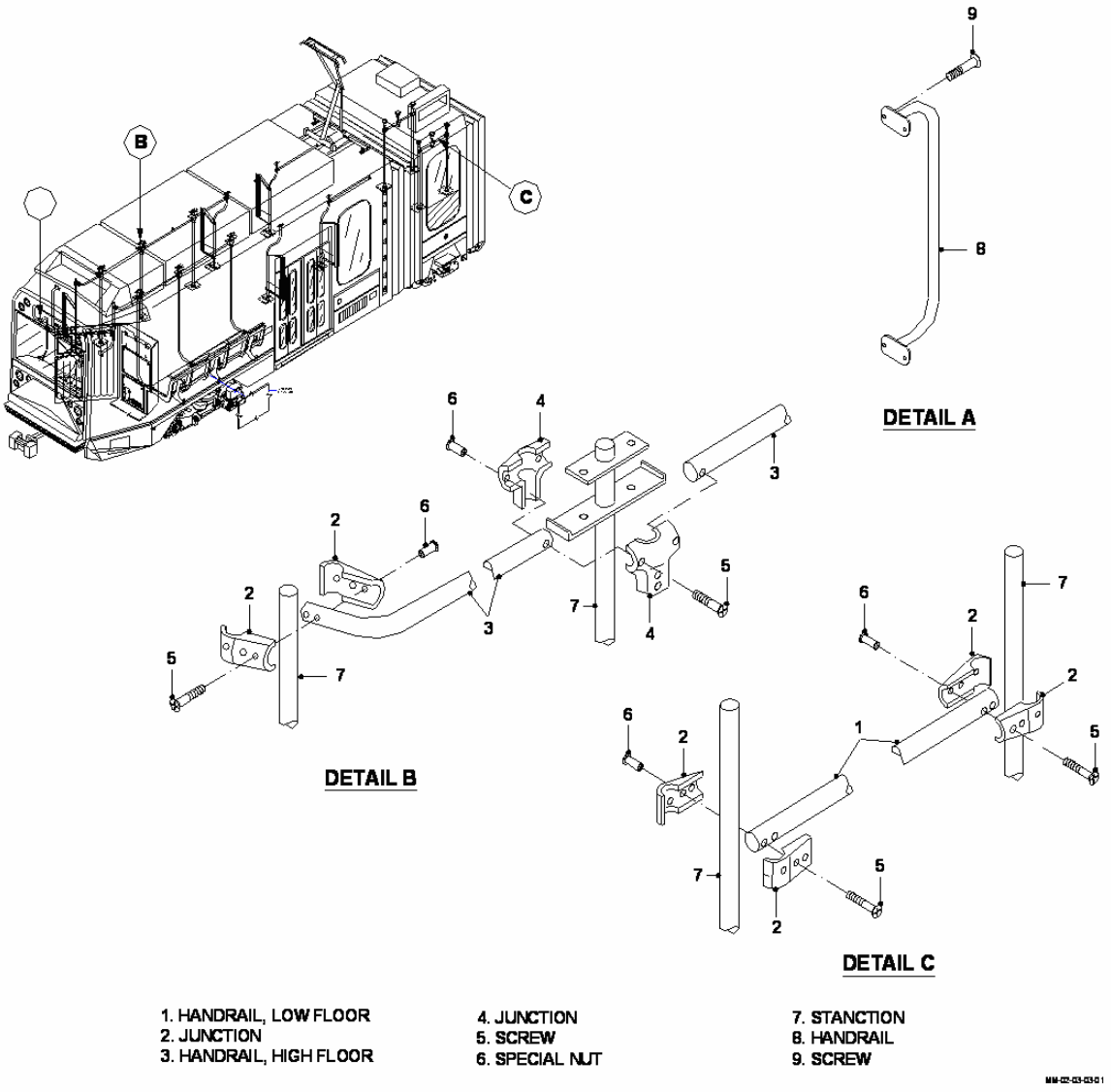


Figure 2-3.3 Handrail, "A", "B" and Articulation Section – Typical Removal

d)

e) Stanchion, Fixed to the Passenger Seats Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Stanchion, Fixed to the Passenger Seats Removal, proceed as follows (Refer to Figure 2-3.4):

  1. Remove handrail junction as follows:
     a. Remove mounting screws and special nuts.
     b. Remove junctions.
  2. Remove screws (2).
  3. Remove bolts (1), washers (24, 25) and nuts (26).
  4. Remove the stanchion (19) with support (3) and plates (4).
  5. Disconnect bracket (21) from stanchion (19) by removing bolt (23) and washer (22).

f) Stanchion, Fixed to the Floor Removal

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Stanchion, Fixed to the Floor, proceed as follows (Refer to Figure 2-3.4):

  1. Remove handrail junction as follows:
     a. Remove mounting screws and special nuts.
     b. Remove junctions.
  2. Remove screws (5).
  3. Remove special screws (6, 7).
  4. Pull up bushing (8), support (9), gasket (10) and spacer (11).

5. Remove screws (12).
6. Remove stanchion (20).
7. Remove support (13), plates (14) and bushing (15).

g) Stanchion, Fixed to the Floor (Articulation Section) Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Remove each Stanchion, Fixed to the Floor (Articulation Section), proceed as follows (Refer to Figure 2-3.4):

1. Remove handrail junction as follows:
   a. Remove mounting screws and special nuts.
   b. Remove junctions.
2. Remove special screws (6, 7).
3. For the lower fastening: pull up bushing (8), support (9), gasket (10) and spacer (11).
4. For the upper fastening: pull down bushing (15), support (9), spacer (11), gasket (10).
5. Remove screws (12, 18).
6. Remove stanchion (20).

h) Stanchions with Entrance Walls Removal

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Remove each Stanchions with Entrance Walls, proceed as follows (Refer to Figure 2-3.4):

1. Remove handrail junction as follows:
   a. Remove mounting screws and special nuts.
   b. Remove junctions.
2. Remove screws (5), bolts (12) and washers (27).

3. Remove support (13), plate (14) and bushing (15).
4. Remove bolts (31), washers (30) and disconnect stanchion (29) from bracket (28).
5. Remove stanchion by pulling up it from entrance wall.

i) Handrail with Passenger Emergency Intercom Box Removal

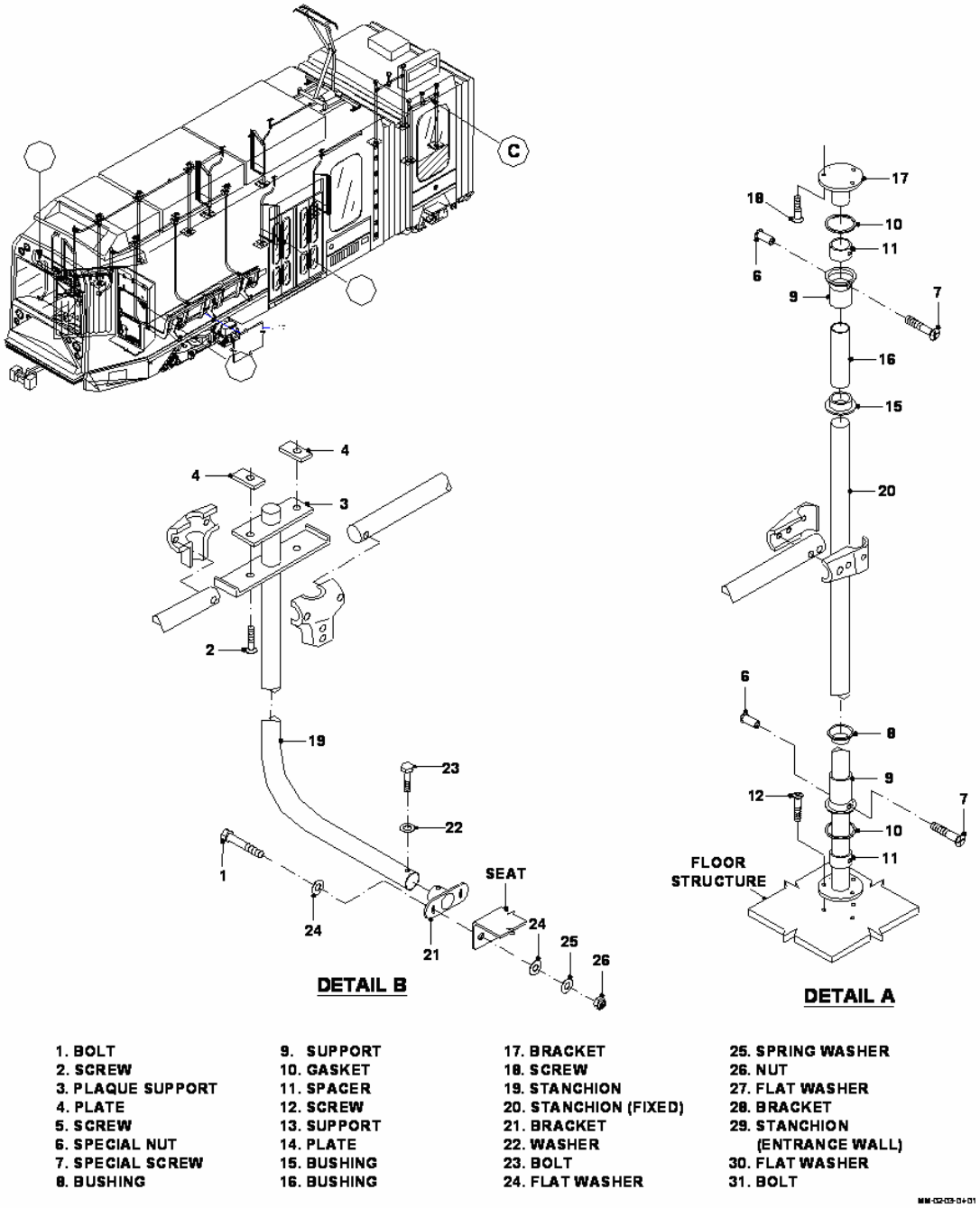
- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

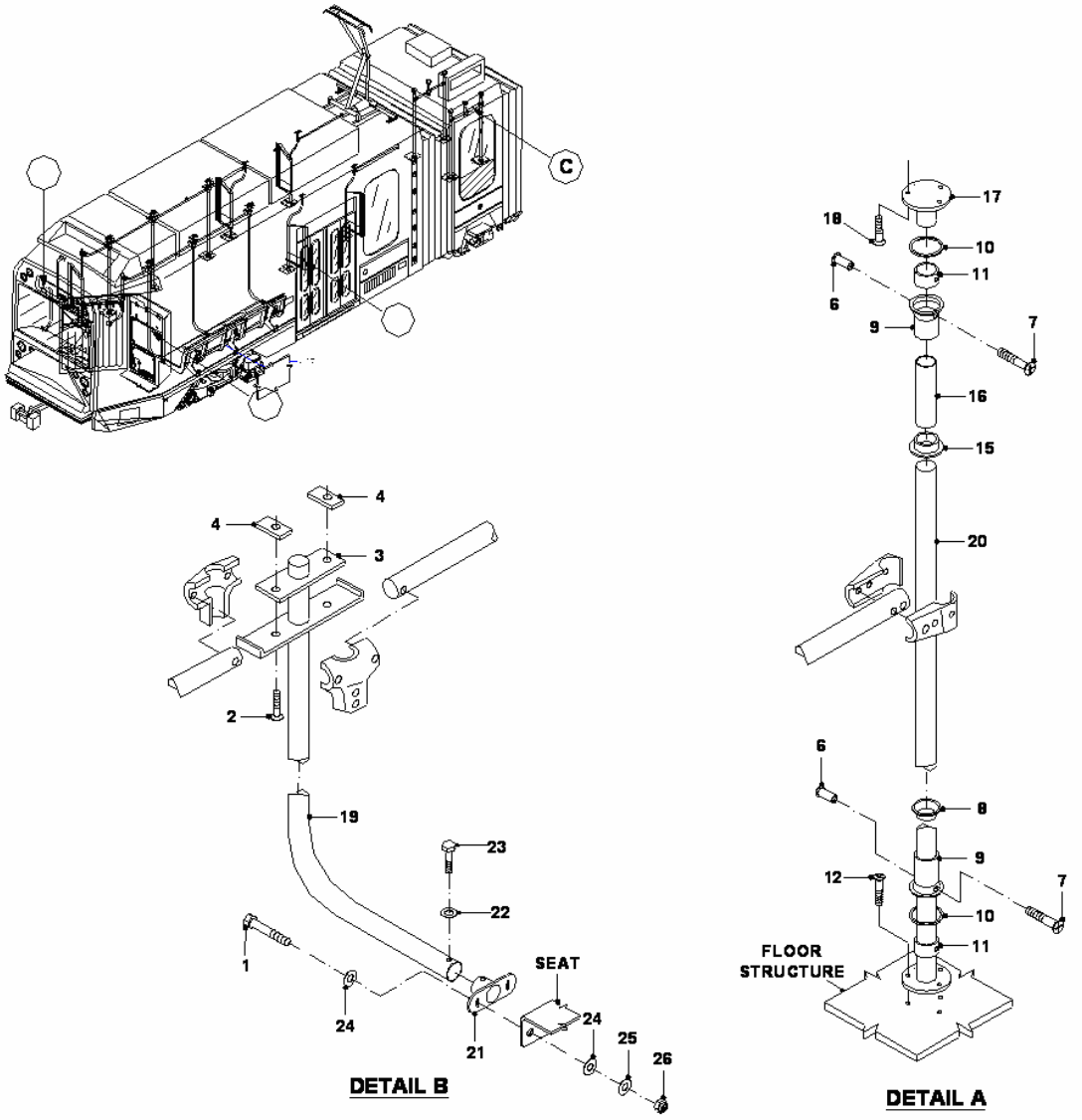
To Remove each Handrail with Passenger Emergency Intercom Box, proceed as follows (Refer to Figure 2-3.5):

1. Remove screws (15) and disconnect Passenger Emergency Intercom (16) from Box (4).
2. Disconnect cables from Passenger Emergency Intercom (16). Make note of wires code/color and tag all wires removed.
3. Remove Passenger Emergency Intercom (16) from Box (4).
4. Remove screws (14) and disconnect Bridgeplate Request Pushbutton (13) from Box (4).
5. Disconnect cables from Bridgeplate Request Pushbutton (13). Make note of wires code/color and tag all wires removed.
6. Remove Bridgeplate Request Pushbutton (13) from Box (4).
7. Remove screws (11) and washers (9, 10).
8. Remove screws (7), then pull out the Handrail with Intercom Box (4).
9. Slide electrical cable from car body structure to locate plug connector (1) and vehicle connector (1A).
10. Disconnect connectors (1, 1A).
11. Remove screw (5) and disconnect support (6) from Handrail (3).
12. Drawn Handrail (3) from Intercom Box (4).
13. Remove screws (17) and disconnect support (2) from car body structure.
14. Drawn Connector (1) with related cables from Handrail (3).
15. Support Bracket (8) and remove screws (12).
16. Remove Bracket (8).



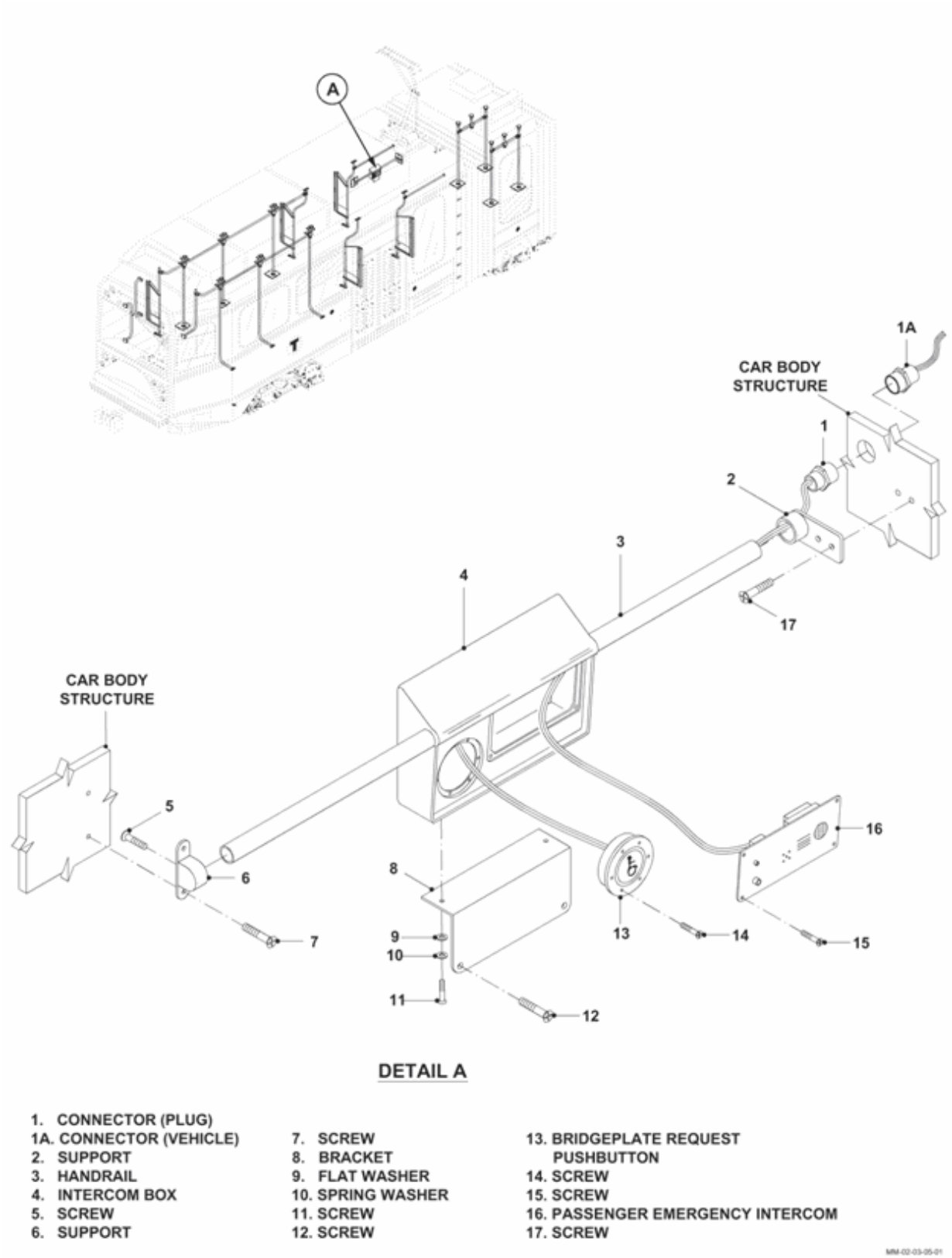
1. BOLT
2. SCREW
3. PLAQUE SUPPORT
4. PLATE
5. SCREW
6. SPECIAL NUT
7. SPECIAL SCREW
8. BUSHING
9. SUPPORT
10. GASKET
11. SPACER
12. SCREW
13. SUPPORT
14. PLATE
15. BUSHING
16. BUSHING
17. BRACKET
18. SCREW
19. STANCHION
20. STANCHION (FIXED)
21. BRACKET
22. WASHER
23. BOLT
24. FLAT WASHER
25. SPRING WASHER
26. NUT
27. FLAT WASHER
28. BRACKET
29. STANCHION (ENTRANCE WALL)
30. FLAT WASHER
31. BOLT

Figure 2-3.4 Stanchions – Typical Removal (Sheet 1 of 2)



1. BOLT	9. SUPPORT	17. BRACKET	25. SPRING WASHER
2. SCREW	10. GASKET	18. SCREW	26. NUT
3. PLAQUE SUPPORT	11. SPACER	19. STANCHION	27. FLAT WASHER
4. PLATE	12. SCREW	20. STANCHION (FIXED)	28. BRACKET
5. SCREW	13. SUPPORT	21. BRACKET	29. STANCHION (ENTRANCE WALL)
6. SPECIAL NUT	14. PLATE	22. WASHER	30. FLAT WASHER
7. SPECIAL SCREW	15. BUSHING	23. BOLT	31. BOLT
8. BUSHING	16. BUSHING	24. FLAT WASHER	

Figure 2-3.4 Stanchions – Typical Removal (Sheet 2 of 2)



1. CONNECTOR (PLUG)
1A. CONNECTOR (VEHICLE)
2. SUPPORT
3. HANDRAIL
4. INTERCOM BOX
5. SCREW
6. SUPPORT
7. SCREW
8. BRACKET
9. FLAT WASHER
10. SPRING WASHER
11. SCREW
12. SCREW
13. BRIDGEPLATE REQUEST PUSHBUTTON
14. SCREW
15. SCREW
16. PASSENGER EMERGENCY INTERCOM
17. SCREW

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Figure 2-3.5 Handrail with Pass. Emer. Intercom Box - Removal

2-3.1.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
     - Wheel Chocks.
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Stanchion and Handrail proceed as follows:

  1. Clean Stanchion and Handrail using mild detergent diluted in water and cleaning rags. Rinse off with clean water and dry with clean cloth.

b) Painting (Not Applicable)

2-3.1.f Inspection

- **Reference Information.**
  1. Tools / Equipment.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Stanchion and Handrail proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Stanchions and Handrails for dent/damage.
  3. Inspect Stanchions and Handrails for correct installation.
  4. Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.1.g Repair

Stanchions and Handrails that are not seriously damaged can be repaired using standard tools, as for standard workshop practices.

NOTE:

1. Burrs & Sharp edges should be blended
2. Surface Finish to be maintained to grain 180

2-3.1.h Reassembly

The Stanchions and Handrails Reassembly procedure consists in the following main operations:

- Handrail, "A", "B" and Articulation Section - Typical Installation.
- Handrail, Next Operator Cab and Cab Dividing Wall Installation.
- Handrail, between Low Floor and High Floor Installation.
- Stanchion, Fixed to the Passenger Seats Installation.
- Stanchion, Fixed to the Floor Installation.
- Stanchion, Fixed to the Floor (Articulation Section) Installation.
- Stanchions with Entrance Walls Installation.
- Handrail with Passenger Emergency Intercom Box Installation.

a) Handrail, "A", "B" and Articulation Section - Typical Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Handrail, proceed as follows (Refer to Figure 2-3.6):
  1. Hold Handrail (1 or 3) to be installed up between Stanchions (7).
  2. Install junctions (2 or 4) as follows:
     a. Position junctions (2 or 4).
     b. Install related screws and special nuts.
     c. Tighten screws to **7 lb-ft (9.5 Nm)**.
     d. Check / adjust Handrail position (parallel to the floor).

b) Handrail, Next Operator Cab and Cab Dividing Wall Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Handrail located next the Operator Cab and Cab Dividing Wall, proceed as follows (Refer to Figure 2-3.6):

  1. Position Handrail (9).
  2. Install the related mounting screws (8).
  3. Tighten screws to **7 lb-ft (9.5 Nm)**.

c) Handrail, between Low Floor and High Floor Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Handrail, between Low Floor and High Floor, proceed as follows (Refer to Figure 2-3.6):

  1. Position the handrail.
  2. Install mounting screw on the lower side.
  3. On the upper side, install the junction on the stanchions with related screws and special nuts.
  4. Tighten lower screw to **7 lb-ft (9.5 Nm)**.

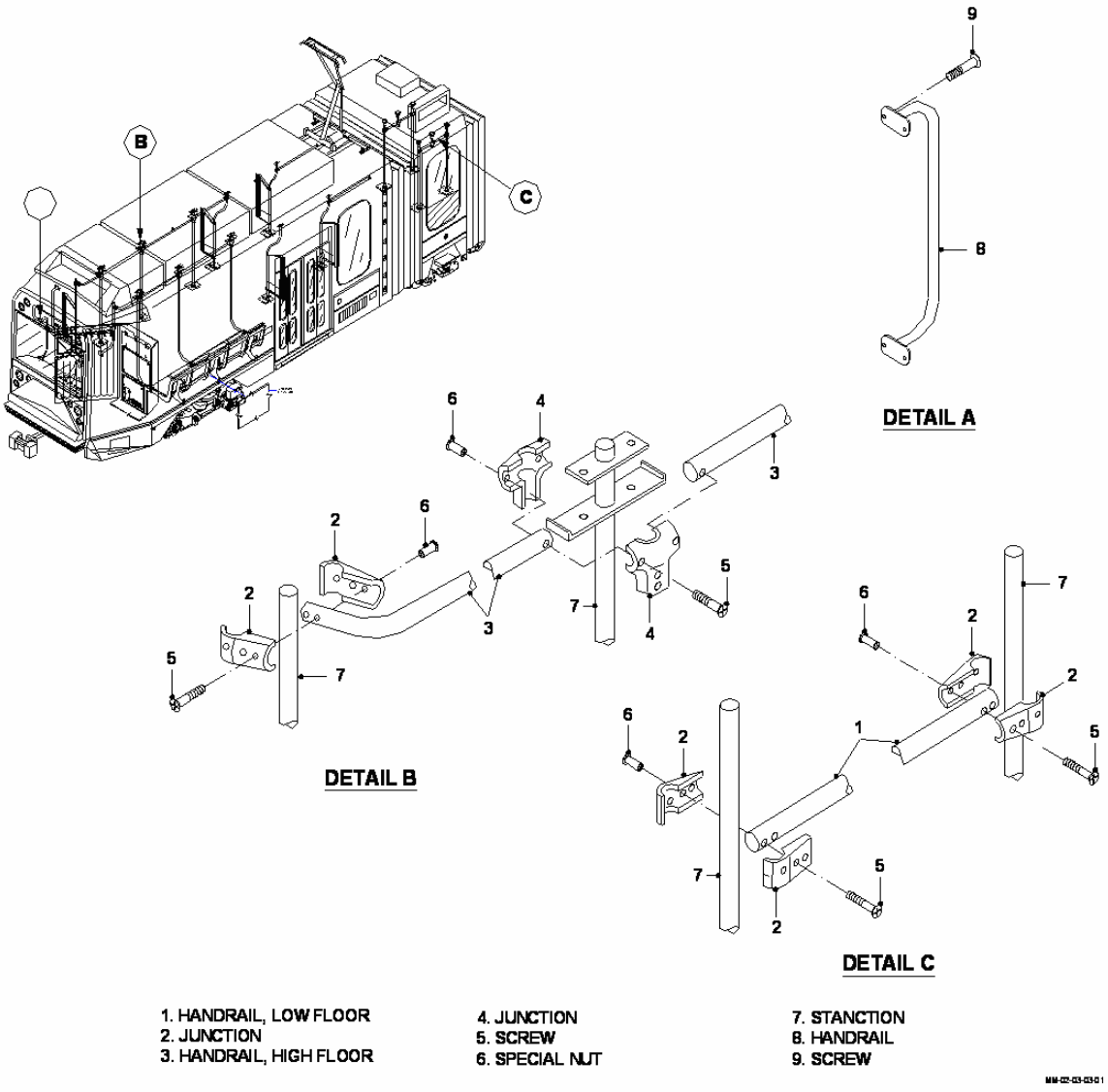


Figure 2-3.6 Handrail, "A", "B" and Articulation Section – Typical Installation

d) Stanchion, Fixed to the Passenger Seats Installation

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Stanchion, Fixed to the Passenger Seats Removal, proceed as follows (Refer to Figure 2-3.7):

  1. Connect bracket (21) to the stanchion (19).
  2. Install bolt (23) and washer (22).
  3. Tigheten bolt (23) to **7 lb-ft (9.5 Nm)**.
  4. Position the plates (4) and support (3) on the related stanchion seat.
  5. Position Stanchion.
  6. Install screws (2).
  7. Install bolts (1), washers (24, 25) and nuts (26).
  8. Tighten screws (2) to **7 lb-ft (9.5 Nm)**.
  9. Tighten nuts (26) as required.
  10. Install handrail junction as follows:
      a. Position junctions.
      b. Install related screws and special nuts.
      c. Tighten screws to **7 lb-ft (9.5 Nm)**.

e) Stanchion, Fixed to the Floor Installation

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Stanchion, Fixed to the Floor, proceed as follows (Refer to Figure 2-3.7):

  1. Insert spacer (11), gasket (10), support (9) and bushing (8) on the stanchion (20).
  2. Install support (13), bushing (15) and plate (14).
  3. Position stanchion.
  4. Install screws (5) and screws (12).
  5. Tighten screws (5, 12) to **7 lb-ft (9.5 Nm)**.
  6. Pull down in proper position spacer (11), gasket (10), support (9) and bushing (8).
  7. Install special screws (6, 7).

8. Tighten special screws (6, 7) to **7 lb-ft (9.5 Nm)**.
9. Install handrail junction as follows:
   a. Position junctions.
   b. Install related screws and special nuts.
   c. Tighten screws to **7 lb-ft (9.5 Nm)**.

f) Stanchion, Fixed to the Floor (Articulation Section) Installation

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Install each Stanchion, Fixed to the Floor (Articulation Section), proceed as follows (Refer to Figure 2-3.7):

1. Insert from the upper stanchion end, for lower fastening: spacer (11), gasket (10), support (9), bushing (8); for upper fastening: bushing (15), support (9), spacer (11), gasket (10) bushing (16), bracket (17).
2. Position stanchion in proper position.
3. Install screws (12, 18).
4. Tighten screws (12, 18) to **7 lb-ft (9.5 Nm)**.
5. Pull in proper position: spacer (11), gasket (10), support (9) and bushing (8-15).
6. Install special screws (6).
7. Tighten the special screws (6) to **7 lb-ft (9.5 Nm)**.
8. Install handrail junction as follows:
   a. Position junctions.
   b. Install related screws and special nuts.
   c. Tighten screws to **7 lb-ft (9.5 Nm)**.

g) Stanchions with Entrance Walls Installation

- **Reference Information.**

1. Tools / Equipment.
   - MBTA Overhaul Standard Tools Kit.

2. Material (Not Applicable).

- **Procedure.**

  To Install each Stanchions with Entrance Walls, proceed as follows (Refer to Figure 2-3.7):

  1. Insert stanchion (29) in the related entrance wall seat.
  2. Connect stanchion (29) to the bracket (28).
  3. Install bolts (31) and washers (30).
  4. Tighten bolts (31) as required.
  5. Position bushing (15), plate (14) and support (13).
  6. Position stanchion.
  7. Install screws (5), washers (27) and bolts (12).
  8. Tighten screws (5) to **7 lb-ft (9.5 Nm)**.
  9. Tighten bolts (12) as required.
  10. Install handrail junction as follows:
      a. Position junctions.
      b. Install related screws and special nuts.
      c. Tighten screws to **7 lb-ft (9.5 Nm)**.

h) Handrail with Passenger Emergency Intercom Box Installation

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Handrail with Passenger Emergency Intercom Box, proceed as follows (Refer to Figure 2-3.8):

  1. Position Bracket (8).
  2. Install and tighten screws (12) to **7 lb-ft (9.5 Nm)**.
  3. Pull out connector (1A) from car body structure.
  4. Position support (2) on the car body structure.
  5. Install and tighten screws (17) to **7 lb-ft (9.5 Nm)**.
  6. Insert Connector (1) with related cables into the Handrail (3).
  7. Connect plug connector (1) to the vehicle connector.

8. Insert handrail end (LH side) into the related seat of Intercom Box (4).
9. Insert handrail end (RH side) in the related seat of support (2).
10. Position Support (6) on the Handrail (3) and lock it by installing screw (5).
11. Tighten screws (5) to **7 lb-ft (9.5 Nm)**.
12. Lock the Intercom Box (4) by installing screws (11) and washers (9, 10).
13. Tighten screws (11) to **7 lb-ft (9.5 Nm)**.
14. Position Bridgeplate Request Pushbutton (13) next to the Box (4).
15. Connect cables to the Bridgeplate Request Pushbutton (13) as noted in the removal procedure.
16. Lock Bridgeplate Request Pushbutton (13) to the Box (4) by installing screw (14).
17. Tighten screws (14) to **7 lb-ft (9.5 Nm)**.
18. Position Passenger Emergency Intercom (16) next to the Box (4).
19. Connect cables to the Passenger Emergency Intercom (16) as noted in the removal procedure.
20. Lock Passenger Emergency Intercom (16) to the Box (4) by installing screw (15).
21. Tighten screws (15) to **7 lb-ft (9.5 Nm)**.

2-3.1.i Adjustment/Test (Not Applicable)

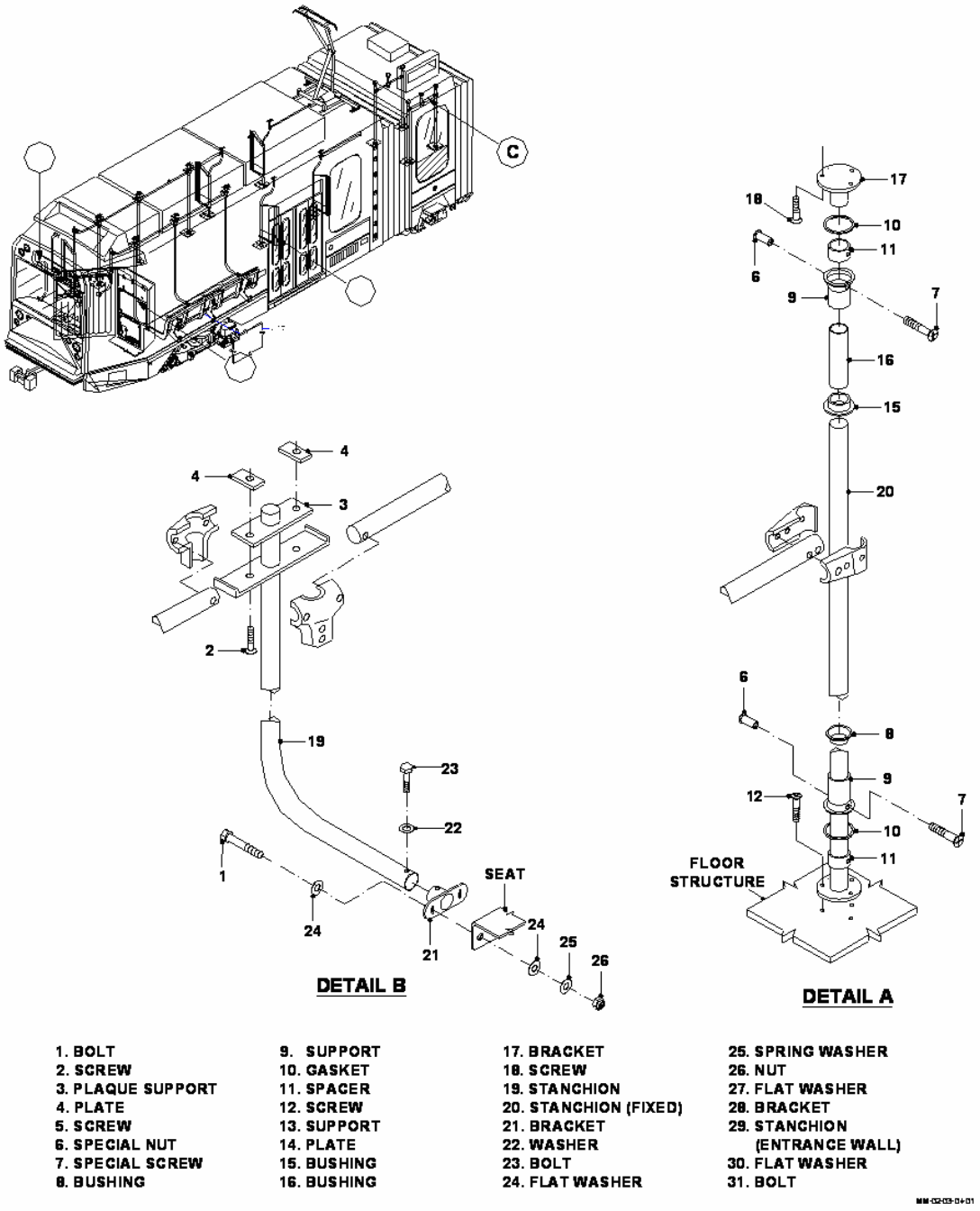


Figure 2-3.7 Stanchions – Typical Installation (Sheet 1 of 2)

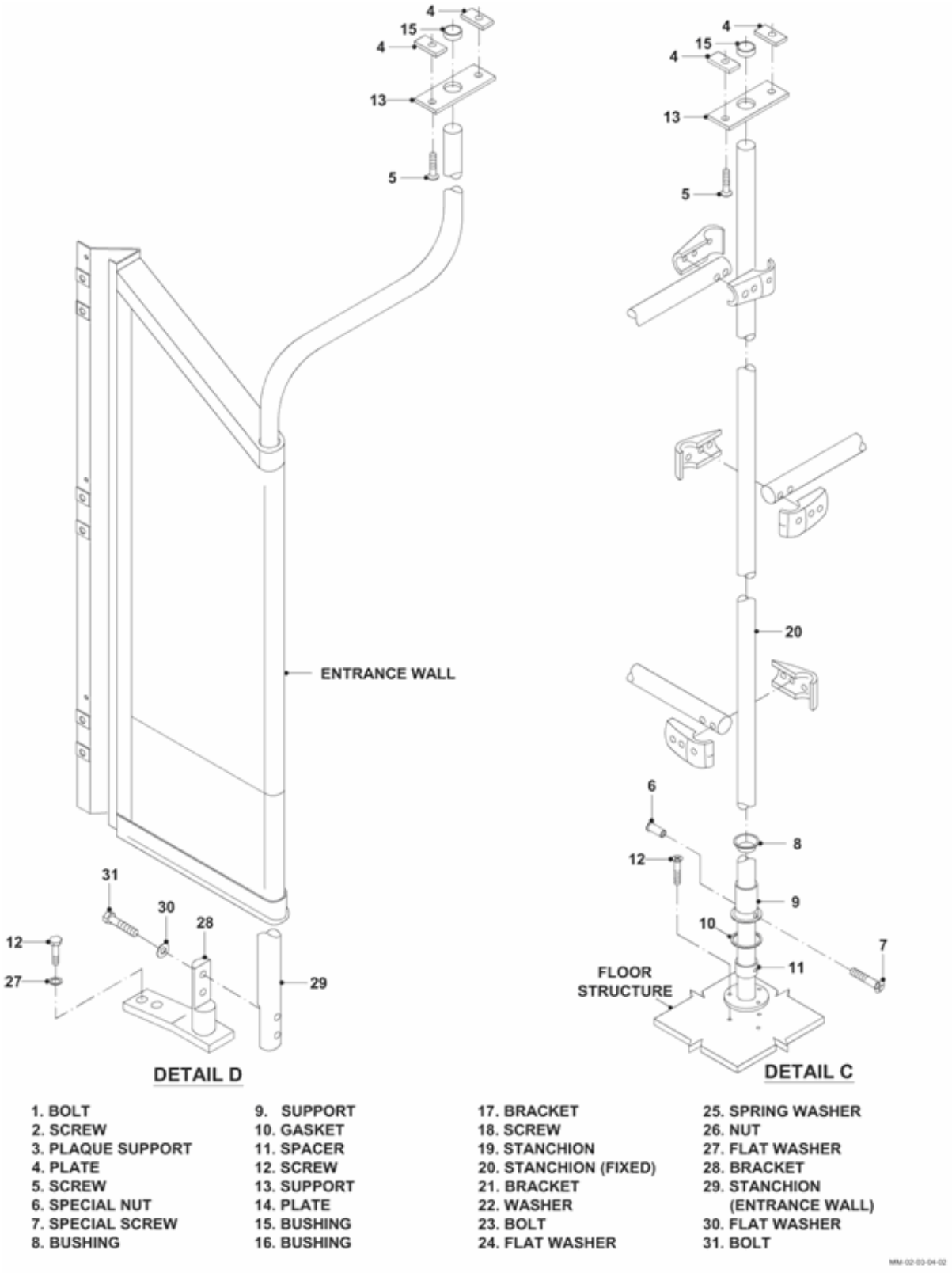


Figure 2-3.7 Stanchions – Typical Installation (Sheet 2 of 2)

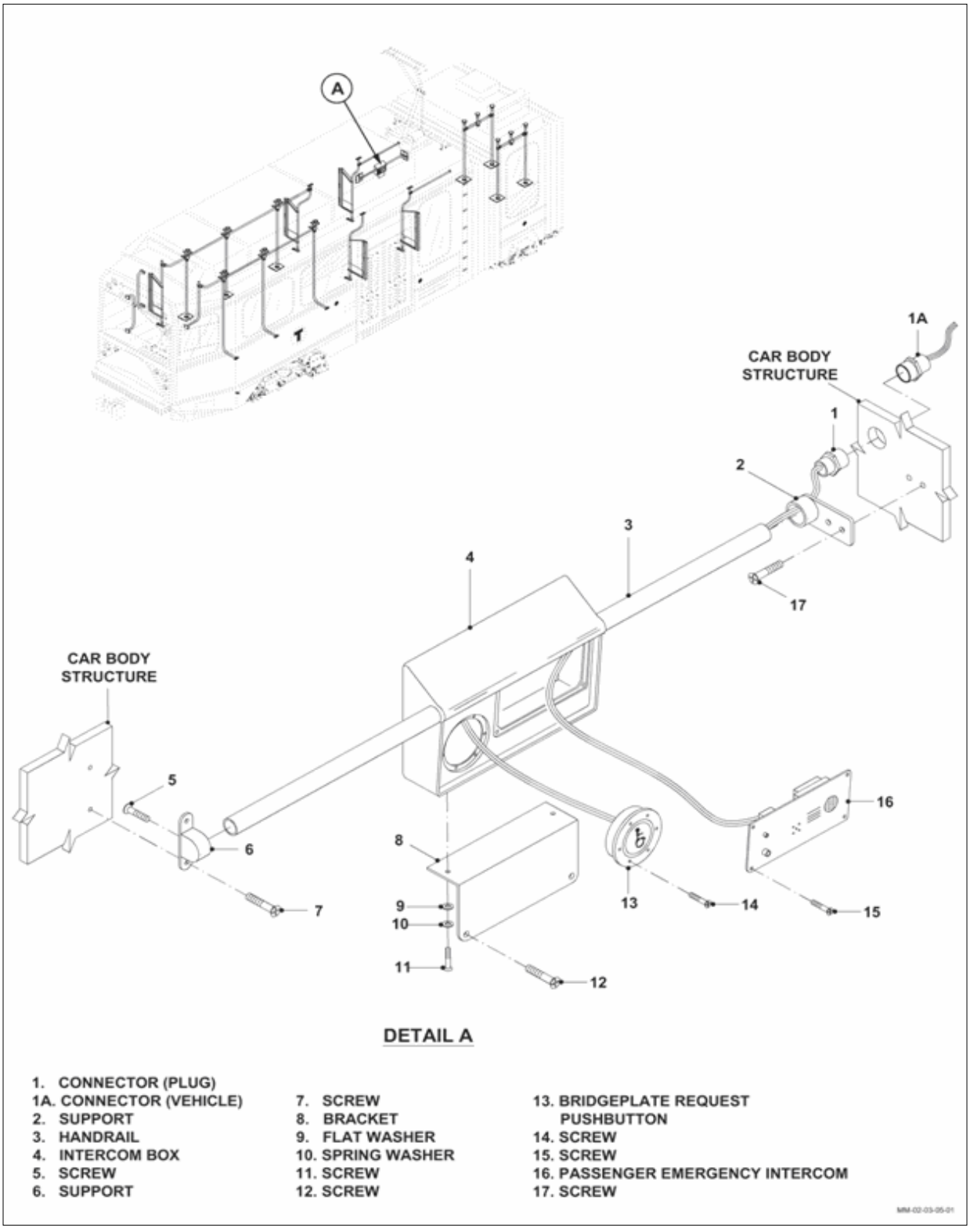


Figure 2-3.8 Handrail with Pass. Emer. Intercom Box - Installation

2-3.2 Liners and Ceiling Panels

2-3.2.a Description and Theory of Operation

The vehicle is equipped with Side Liners and Ceiling Panels to hide the structures, and to provide comfort to the passengers (Refer to Figure 2-3.9).

Between the side liners / ceiling panels and the Car Body structure, an acoustical and thermal insulation is provided in order to limit heat and noise transmission.

The acoustical insulation is made with sound deadener sprayed directly onto the structure.

"Anti-squeak" tape is used between lining and any structure to which they are attached or with which they come in contact. Where linings cover apparatus requiring replacement, or even in frequent maintenance, they are fastened with captive, tamper proof machine screws, designed to allow ready access for removal and replacement of apparatus. The ceiling under the overhead HVAC units is composed of the minimum number of pieces consistent with the need for access to equipment.

For Roof mounted cable trays refer section 2-3.8

The Side Liners (Refer to) characteristics are:

- Qty of 15 for each vehicle section, made with laminated sheet (Abet 477 type) (0.1 in. thick) and installed by moldings and screws.

The Ceiling Panels (Refer to) characteristics are:

- Sandwich type (0.4 in. thick) made with laminated plastic sheets (0.04 in. thick) and phenolic foam honeycomb (0.03 in. thick).
- Qty of 4 installed, by screws, in each vehicle section.
- Qty of 1 installed by screws and moldings in the articulation sections.

The correspondence between each Hinged / movable Panel and relevant Equipment covered is as follows :

Hinged Panel	**Equipment**
Vehicle Ceiling Panels	Cables/Junction Boxes
Art. Sect Ceiling Panels	Cables/Junction Boxes
Cab Dividing Wall (Liners)	Wiper Wash Tank

Movable Panel	**Equipment**
Next Art. Sect (Liners)	Cables/Junction Boxes
Cab Dividing Wall (Liners)	Relay Panel

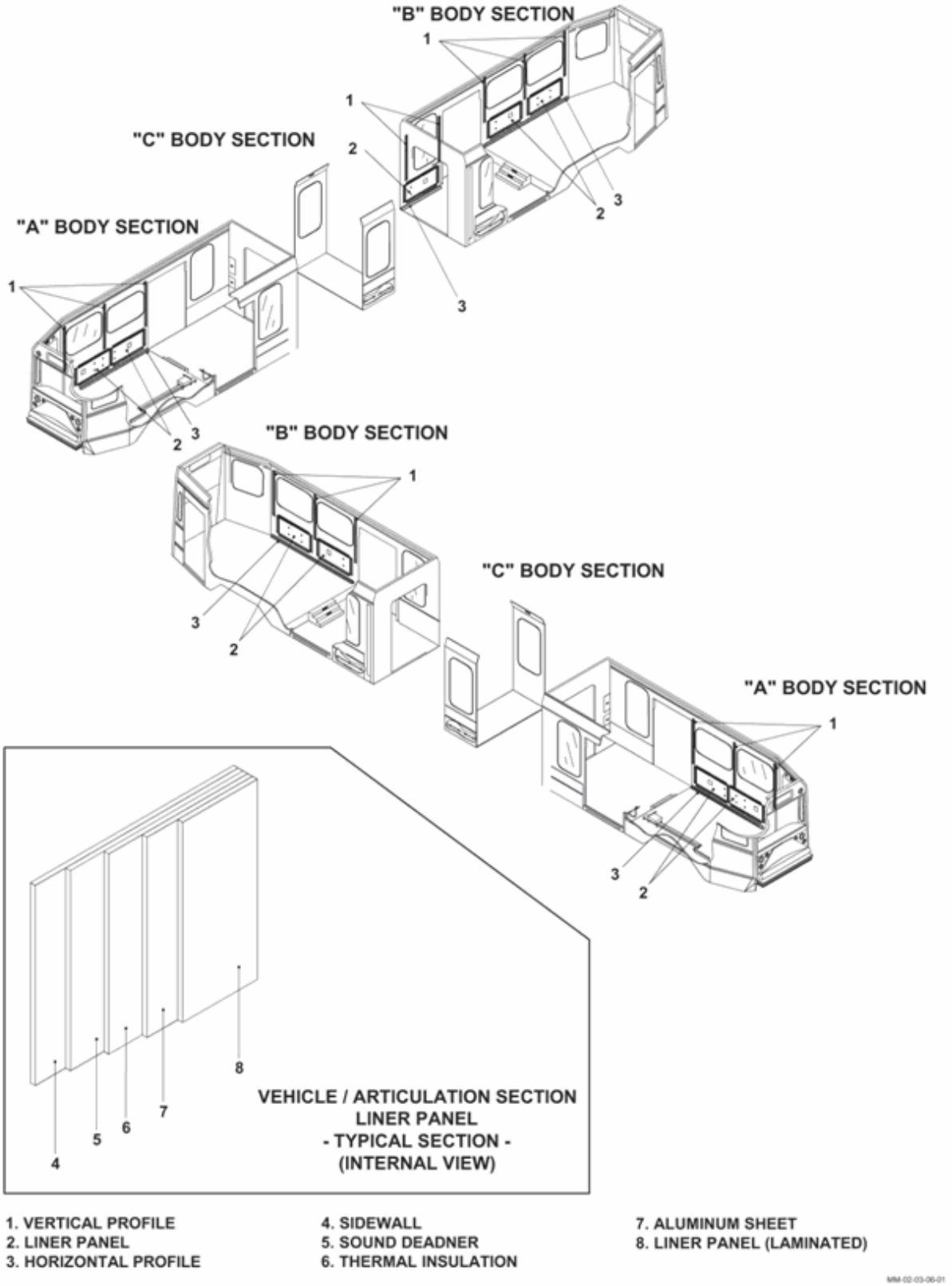


Figure 2-3.9 Liners and Ceiling Panels – Location (Sheet 1 of 2)

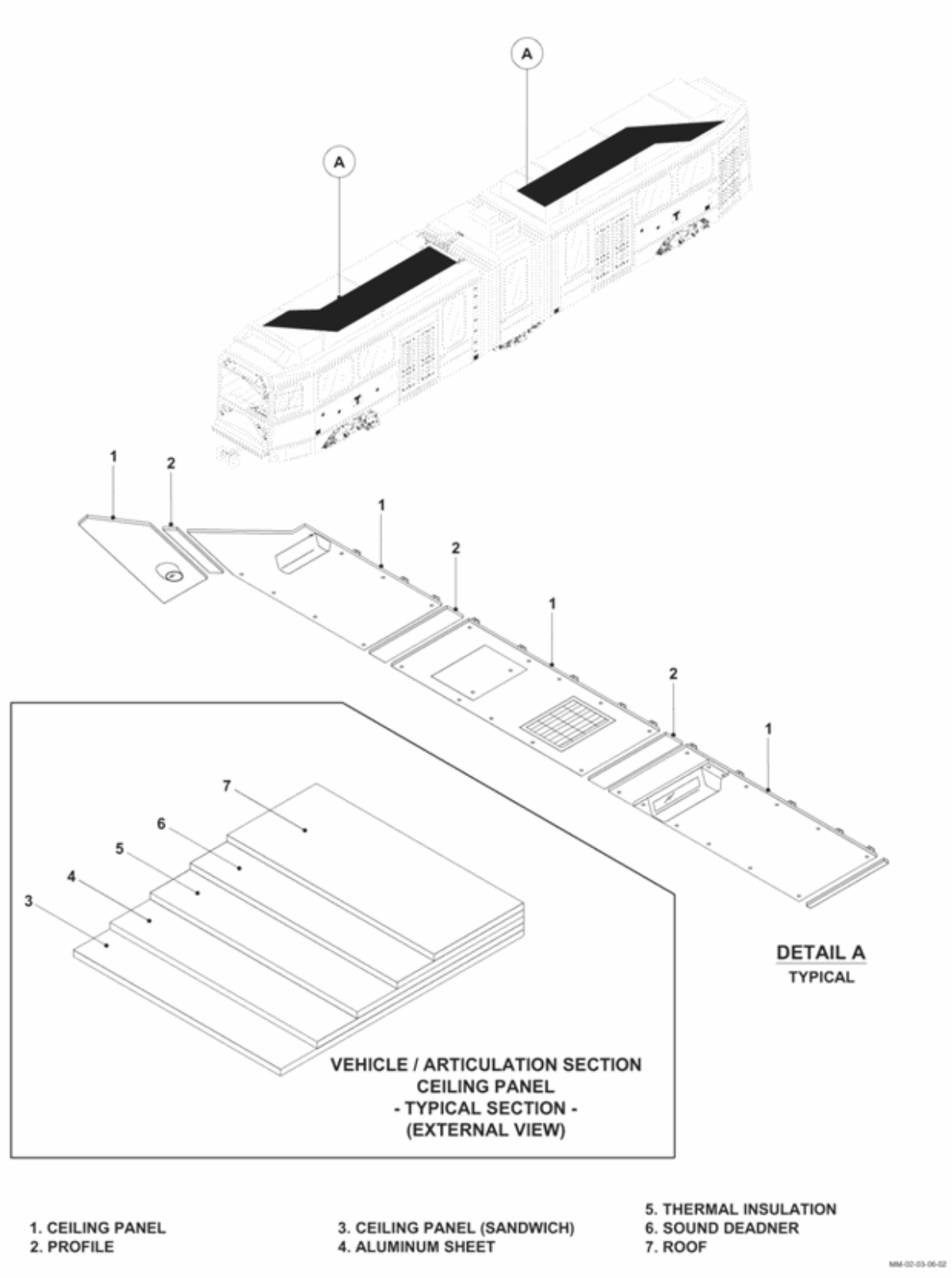


Figure 2-3.9 Liners and Ceiling Panels – Location (Sheet 2 of 2)

2-3.2.b Specific Safety Precautions

WARNING: **USE PROTECTIVE CLOTHING DURING PREPARATION AND USE OF RESIN MIXTURE. ADEQUATE VENTILATION MUST BE PROVIDED.**

WARNING: **SANDING OR DRILLING ON FIBERGLASS LAMINATIONS PRODUCES A FINE DUST THAT MAY CAUSE SKIN IRRITATION. BREATHING THIS DUST MAY BE HARMFUL. COMPLY WITH NECESSARY PROTECTIVE MEASURES.**

WARNING: **BEFORE PERFORMING LINERS AND CEILING PANELS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

2-3.2.c Fault Isolation

For Liners and Ceiling Panels Fault Isolation procedure, refer to Table 2-3.8.

Table 2-3.8 Liners and Ceiling Panels - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten.
2. Liners and Ceiling Panels damaged.	1. Vandalism/Impact.	1. Replace.
3. Safety Chains loose / missing.	1. Attaching Parts defective.	1. Replace / Fasten.
	2. Vibration.	1. Investigate / Replace / Fasten.
4. Hinges / Latch loose / missing.	1. Attaching Parts defective.	1. Replace / Fasten.
	2. Vibration.	1. Investigate / Replace / Fasten.

2-3.2.d Disassembly

The Liners and Ceiling Panels Removal procedures consist in the following main operations:

- Liners – Typical Removal.
- Ceiling Panels - Typical Removal.
- Movable Panels – Typical Removal.
- Hinged Panel - Typical Removal.
- Safety Cable Removal
- Latch - Typical Removal.

a) Liners – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Liner, proceed as follows (Refer to Figure 2-3.10):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove passengers seats in the involved area. (Refer to para 2-3.4.d).
  3. Remove screws (4 or 9) on the finishing moldings in the involved area.
  4. Remove finishing moldings (2 ,6 or 8).
  5. Remove the liner (5 or 7).

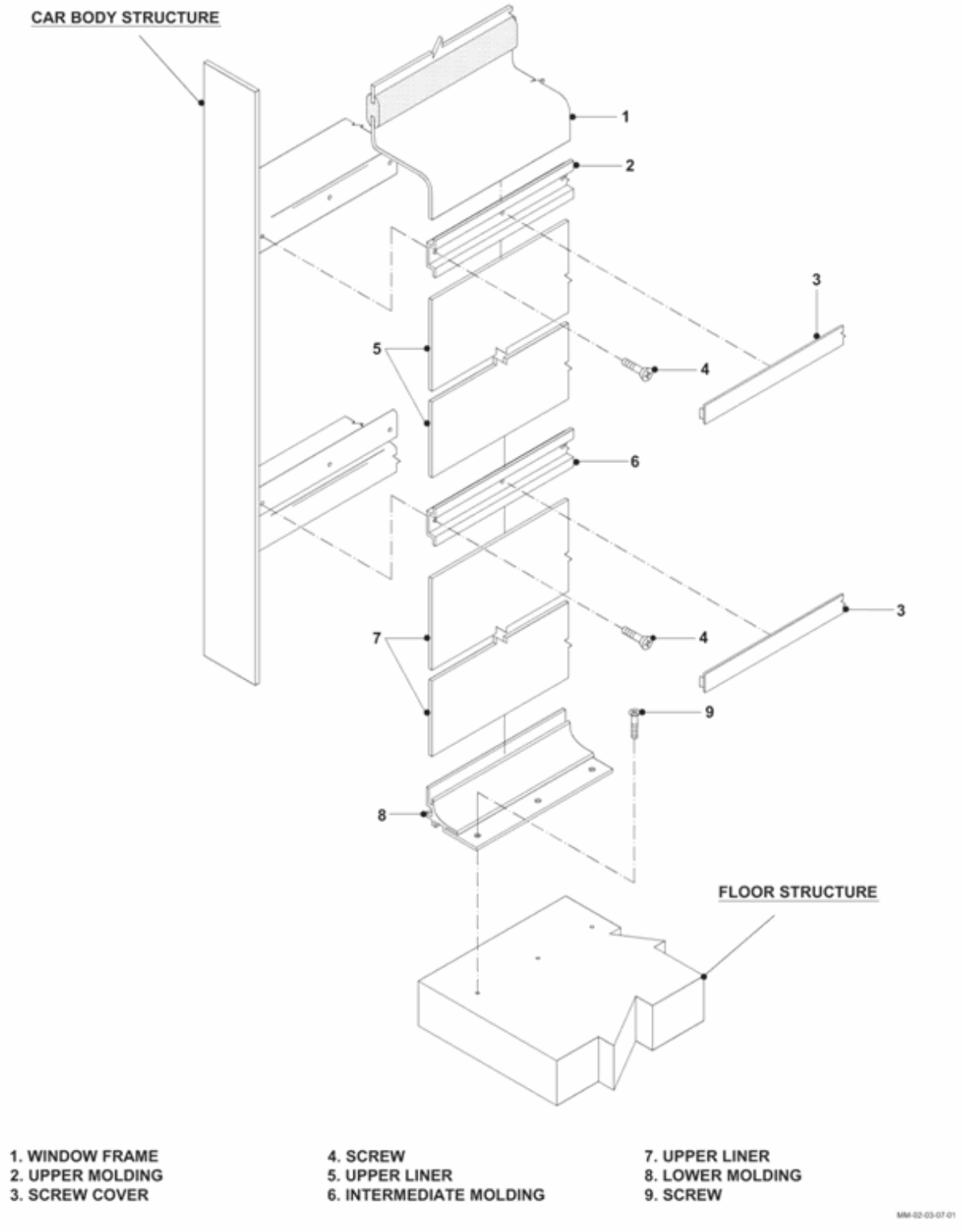


Figure 2-3.10 Liners - Typical Removal

b) Ceiling Panels - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Passenger Compartment Ceiling Panel, proceed as follows (Refer to Figure 2-3.11):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove handrails and/or stanchions (2) involved in the panel removal operation (Refer to para 2-3.1.d).
  3. Remove the equipment involved in the panel removal operation (if installed).
  4. Remove screws (5), washers (4) and gaskets (3) on moldings (as required).
  5. Remove the panel(s).

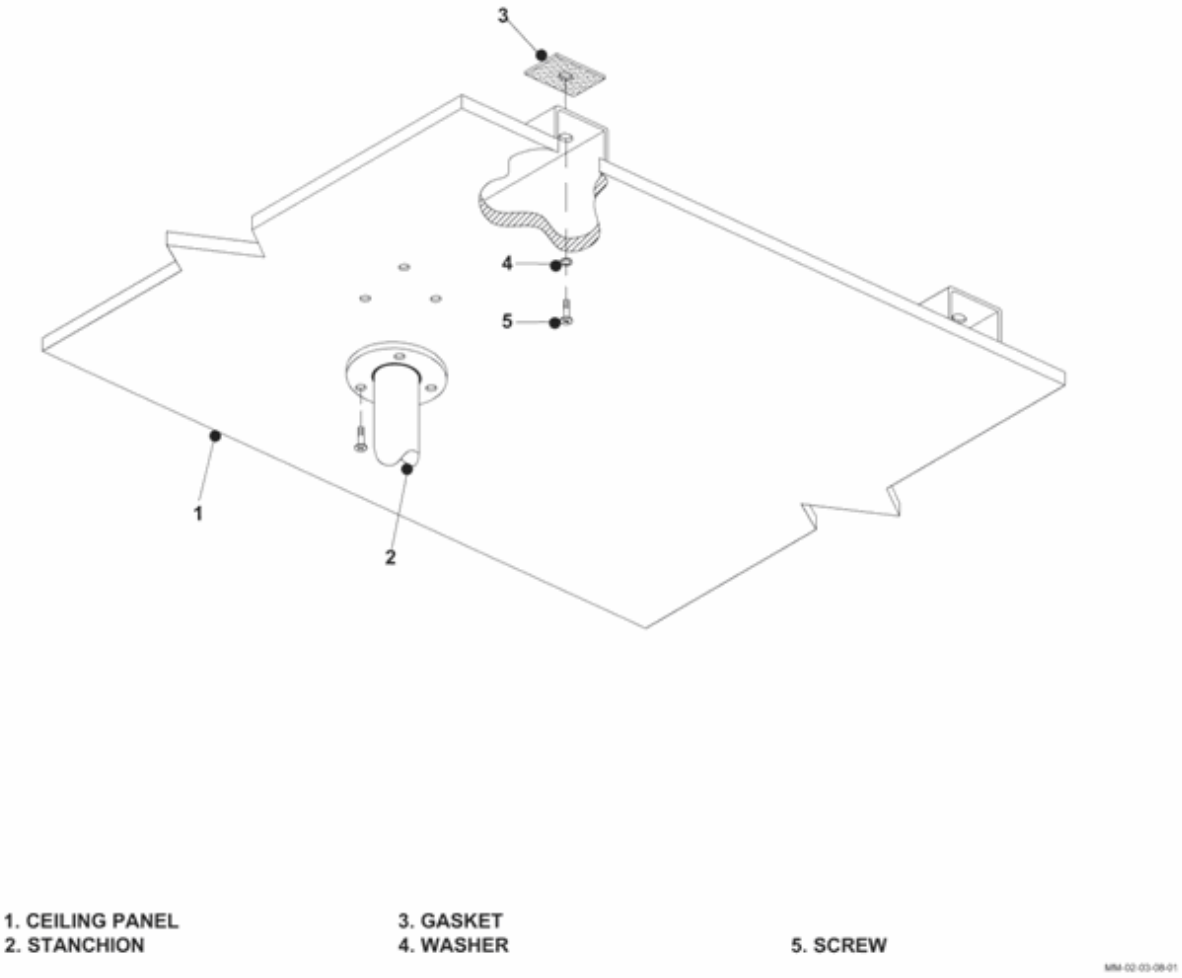


Figure 2-3.11 Ceiling Panels - Typical Removal

c) Movable Panels – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Movable Panel, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using the Maintenance Key open panel latches.
  3. Remove panel.

d) Hinged Panel - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Hinged Panel, proceed as follows (Refer to Figure 2-3.12):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using the Maintenance Key open the involved panel.
  3. Disconnect safety cable (13) from hinged panel (12) by opening swivel hook (15) and open completely the panel.
  4. Support the panel and remove nuts (1), Screws (6) and Washers (17,18,19).
  5. Remove panel (12).
  6. To remove bracket (2) and hinge (5) proceed as follows:
     a. Remove bolts (3) and nuts (1).
     b. Remove bracket (2).
     c. Remove nuts (1) and pull out hinge (5).

e) Safety Cable Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Safety Cable, proceed as follows (Refer to Figure 2-3.12):
  1. Remove the involved panel (Refer to the related para 2-3.2.d).
  2. Remove clamping rings (14) from safety cable (13).
  3. Remove safety cable (13) and swivel hook (15).
  4. Discard damaged elements.

f) Latch - Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Latch, proceed as follows (Refer to Figure 2-3.12):
  1. Remove the involved panel (Refer to the related para 2-3.2.d).
  2. Remove screw (7) and washer (8).
  3. Disconnect lever (9) from latch.
  4. Remove special nut (10) and pull out latch (11) from panel.
  5. Remove latch (11).

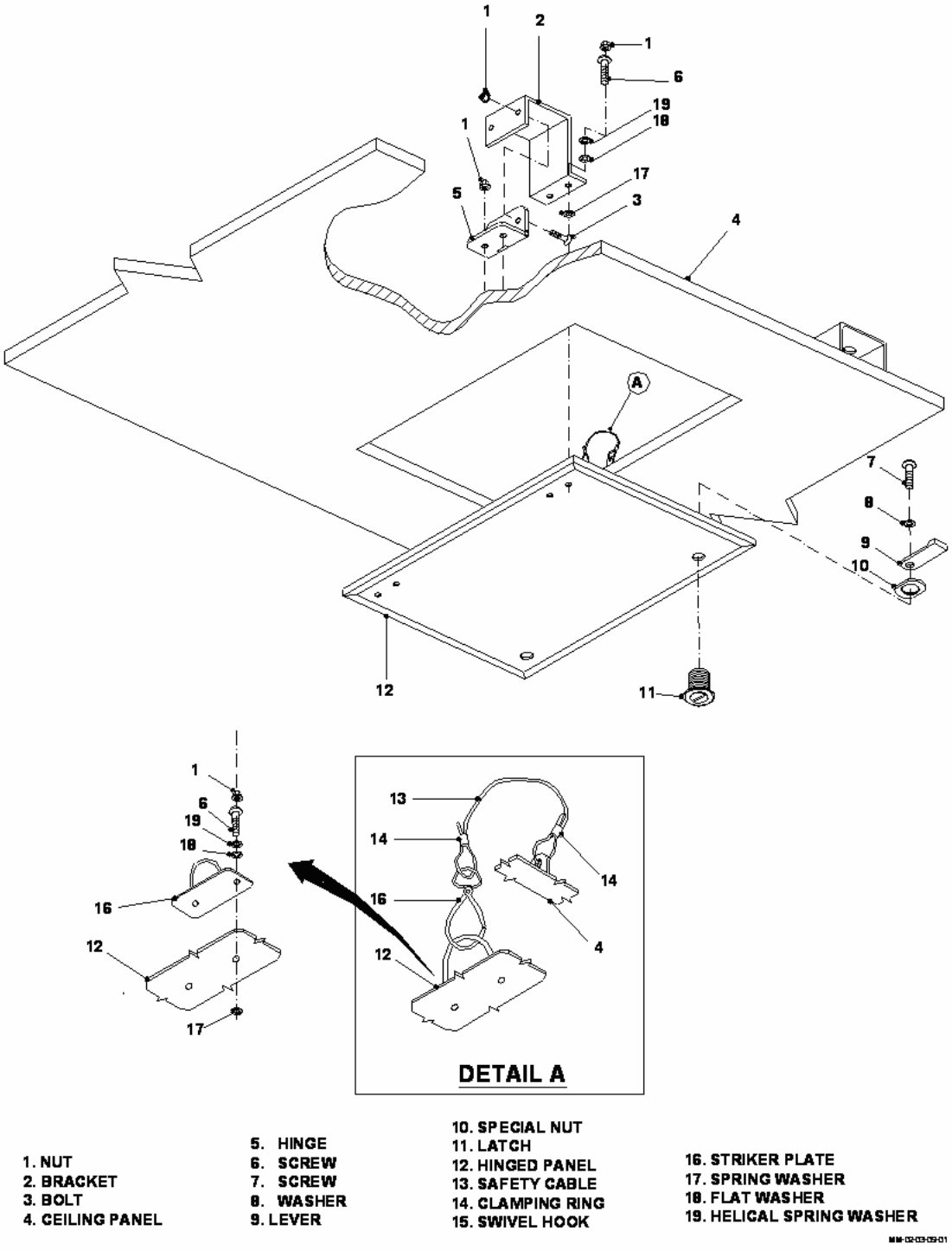


Figure 2-3.12 Hinged Panel - Typical Removal

2-3.2.e Cleaning/Painting

a) Cleaning

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).

- **Procedure.**

  To Clean each Liner and Ceiling Panel, proceed as follows:

  1. Clean Liners and Ceiling Panels using mild detergent diluted in water; rinse and dry with clean water and cleaning rags.

b) Painting (Not Applicable)

2-3.2.f Inspection

- **Reference Information.**

  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).

- **Procedure.**

  To Inspect each Liner and Ceiling Panel proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Liners and Ceiling Panels for dents, cracks, scratches or burns.
  3. Inspect Liners and Ceiling Panels for correct installation.
  4. Inspect Hinges /Latch for correct operations. If necessary adjust clearance. (Refer to para 2-3.2.d).
  5. Inspect Safety Cable for loose / missing hardware and proper operation by opening the relevant Ceiling Panel using Maintenance Key.
  6. Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.2.g Repair

The Liners and Ceiling Panels Repair procedures consist in the following main operations:

– Liners Panels (Melamine).

– Ceiling Panels (Sandwich).

a) Liners Panels (Melamine)

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Repair Liners Panels (Melamine), operate as follows:

  1. Minor scratches and burns: do not require any repair action.
  2. Larger scratch marks are eliminated by rubbing with color matched crayons or filling with color matching paint; sanding should be avoided since it may remove the protective melamine finish, thus permanently reducing resistance to wear.
  3. Burn marks and stains may be removed initially using soap and water; if this does not remove the stain, then use a lacquer thinner or an alcohol based solvent.
  4. Deep scratches and burns are treated by filling with an automotive type polyester filler or with dual component plastic epoxy and painting with a matching color paint.
  5. Seriously damaged panels should be replaced.
  6. Separation due to stress: in the event that abnormal stresses cause the melamine to separate, affecting a large, noticeable area, the panel must be replaced.

     NOTE: Separation limited to a small area does not require any repair action.

  7. Breakage due to impact may be repaired by drilling a small hole at the end of the crack and then filling the breakage with an automotive type polyester filler of a matching color or with a dual component plastic epoxy and then painting with matching color.

b) Ceiling Panels (Sandwich)

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Repair Ceiling Panels (Sandwich), operate as follows:

  1. Minor scratches and cracks:
     a. The damaged surface must be cleaned and roughened.
     b. Prepare cracks by drilling a small hole at each end of the crack and scrape the crack into a shallow 'V' shape.
     c. Prepare polyester body putty with paste catalyzer: mix 100 parts putty with 10 parts catalyzer and generously fill the damaged part.

     NOTE: Resin and catalyzer should not be mixed until required because mixture has a limited pot life (50 min approximately). Warming mixture reduces viscosity and aids handling, but shortens pot life of mixtures. In all cases, refer to resin manufacturer's instructions on use of resin.

     d. After polymerization has occurred, wet sand (with 400 grain sand paper) the surface until smooth and flush with the fiberglass in preparation for the application of two coats, each 60 microns thick, of Gel-Coat.
     e. No sanding is required between coats.
  2. Burns:
     a. Remove all the Gel-Coat from the damaged surface down to the fiberglass (Mat), then proceed as described for minor scratches and cracks.
  3. Breaks:
     a. Remove the damaged layer, creating a regular-shaped opening in the surrounding area, with defined edges.
     b. Cut into the internal insulation, as much as necessary.
     c. Using a grinding-wheel, taper the edges of the opening to a width of about 1 in.; sand the surrounding area about 2 in.
     d. Prepare polyester body putty with paste catalyzer: mix 100 parts putty with 23 parts catalyzer and generously fill the damaged part.

NOTE: Resin and catalyzer should not be mixed until required because mixture has limited pot life (50 min approximately). Warming mixture reduces viscosity and aids handling, but shortens pot life of mixtures. In all cases, refer to resin manufacturer's instructions on use of resin.

e. Fill the cavity with phenolic foam honeycomb layered with fiberglass impregnated with catalyzed resin.
f. Sand (with abrasive paper) the edges of the opening and clean with acetone.
g. Apply layers of impregnated cloth over repaired area, pressing the cloth thoroughly with brush knife in order to obtain complete adhesion and removal of any air bubbles.
h. Let dry until completely hard (polymerization).
i. After polymerization has occurred, wet sand (with 400 grain sand paper) the surface until smooth and flush with fiberglass to prepare for the application of two coats, each 60 microns thick, of Gel-Coat.
j. No sanding is required between coats.

2-3.2.h Reassembly

The Liners and Ceiling Panels Installation procedures consist in the following main operations:

- Liners – Typical Installation.
- Ceiling Panels - Typical Installation.
- Movable Panels – Typical Installation.
- Hinged Panel - Typical Installation.
- Safety Cable Installation
- Latch - Typical Installation.

a) Liners – Typical Installation

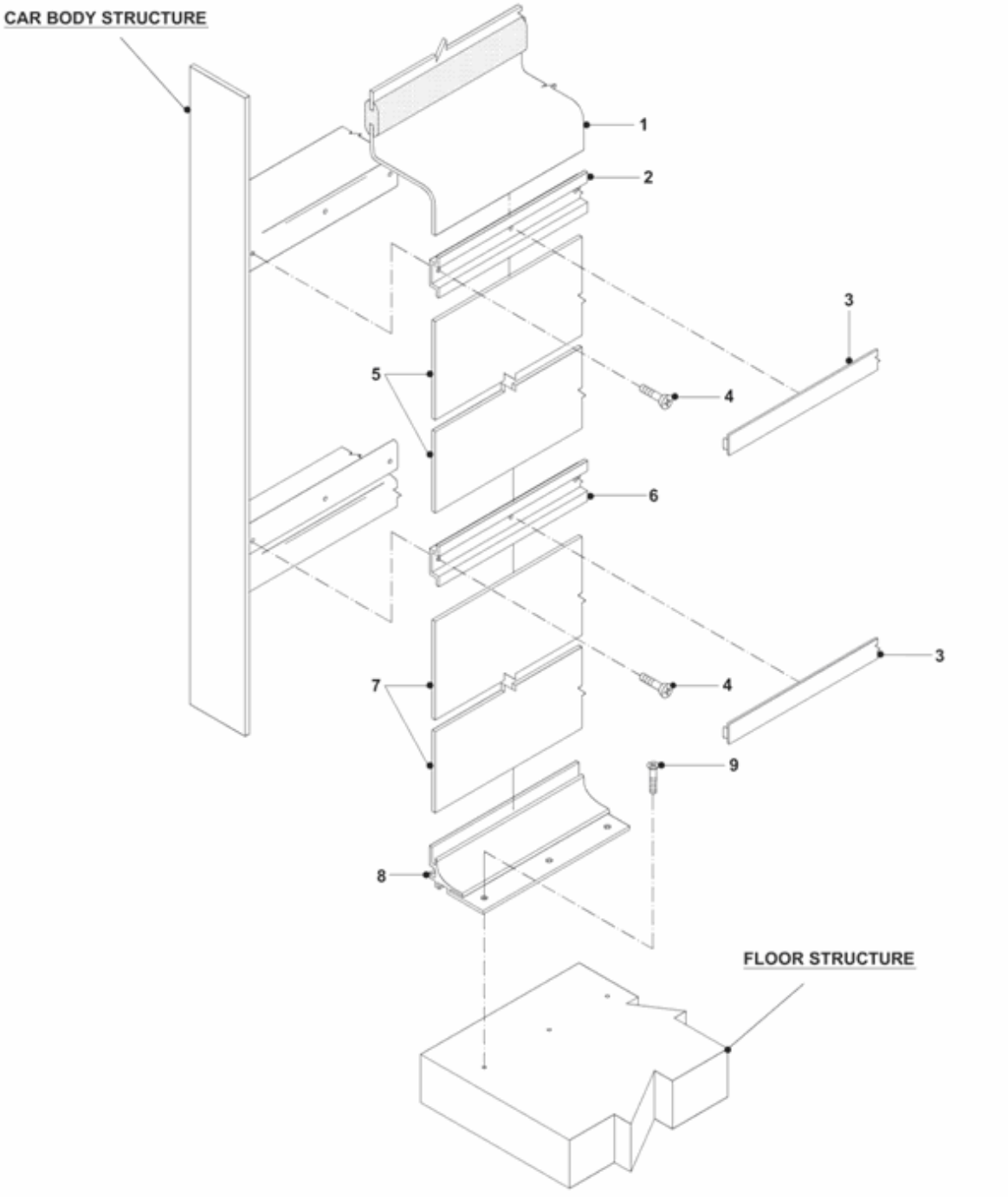
- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Liner, proceed as follows (Refer to Figure 2-3.13):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position liner (5 or 7).
  3. Install finishing moldings (2 ,6 or 8).
  4. Install and tighten screws (4 or 9) to **7 lb-ft (9.5 Nm)**.
  5. Install passengers seats. (Refer to para 2-3.2.h).



1. WINDOW FRAME
2. UPPER MOLDING
3. SCREW COVER
4. SCREW
5. UPPER LINER
6. INTERMEDIATE MOLDING
7. UPPER LINER
8. LOWER MOLDING
9. SCREW

Figure 2-3.13 Liners - Typical Installation

b) Ceiling Panels - Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Passenger Compartment Ceiling Panel, proceed as follows (Refer to Figure 2-3.14):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position ceiling panel.
  3. Position the moldings and lock it by installing screws (5), washers (4) and gasket (3) (as required).
  4. Install the equipment involved in the panel installation operation (if installed).
  5. Install handrails and stanchions involved in the panel installation operation (Refer to para 2-3.2.h).

  To Repair Liners Panels (Melamine), operate as follows:

  6. Minor scratches and burns: do not require any repair action.
  7. Larger scratch marks are eliminated by rubbing with color matched crayons or filling with color matching paint; sanding should be avoided since it may remove the protective melamine finish, thus permanently reducing resistance to wear.
  8. Burn marks and stains may be removed initially using soap and water; if this does not remove the stain, then use a lacquer thinner or an alcohol based solvent.

Deep scratches and burns are treated by filling with an automotive type polyester filler or with dual component plastic epoxy and painting with a

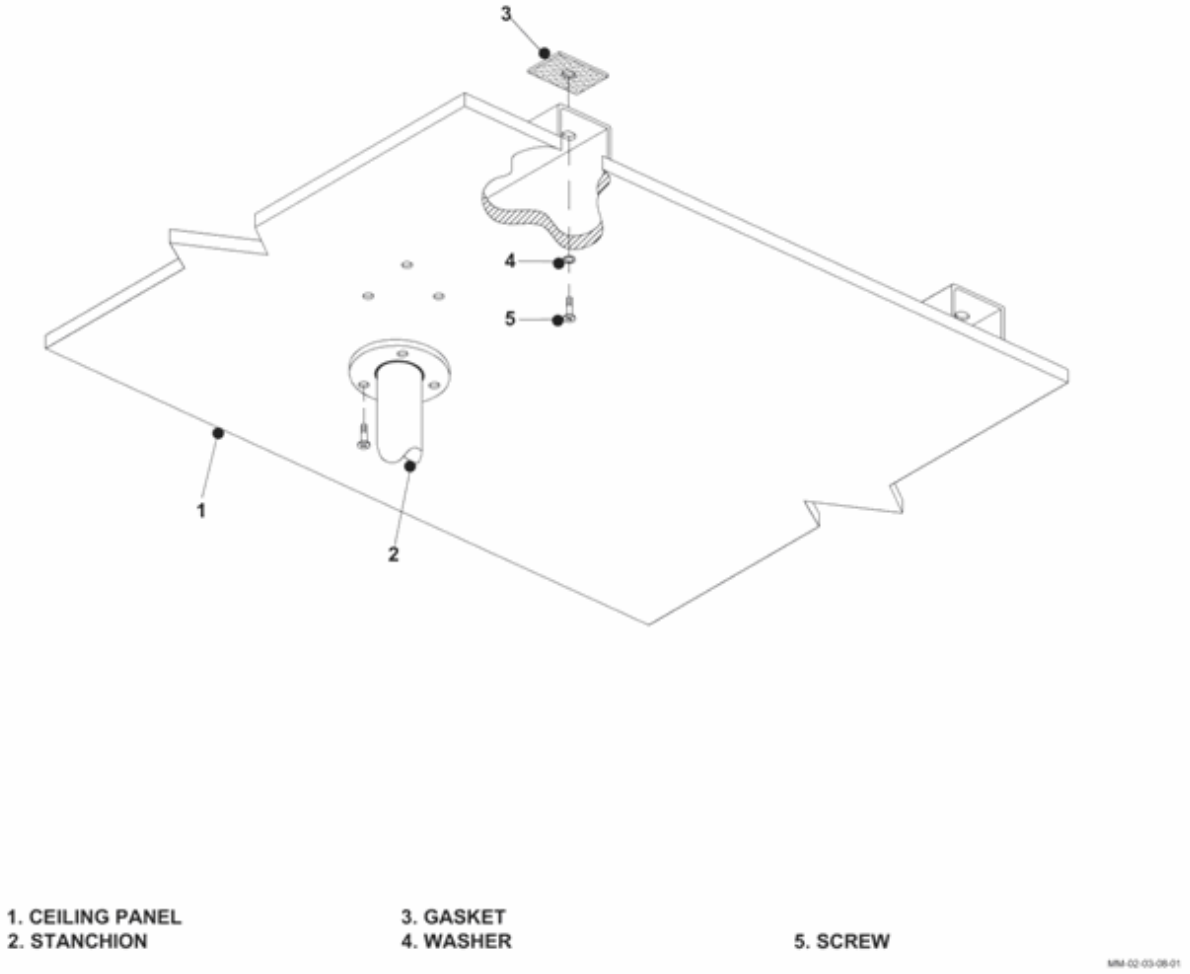


Figure 2-3.14 Ceiling Panels - Typical Removal

c) Movable Panels – Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Movable Panel, proceed as follows:

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position panel.
  3. Using the Maintenance Key lock panel latches.

d) Hinged Panel - Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Hinged Panel, proceed as follows (Refer to Figure 2-3.15):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. To install bracket (2) and hinge (5) proceed as follows:
     a. Position hinge (5).
     b. Install nuts (1) and tighten to **7 lb-ft (9,5 Nm)**.
     c. Position bracket (2).
     d. Install and tighten Bolts (3) and nuts (1).
  3. Position panel (12).
  4. Install washers (17,18,19), Screws (6) & nuts (1) and tighten to **7 lb-ft (9,5 Nm)**.
  5. Connect safety chain (13).
  6. Close the panel using the Maintenance Key. As necessary, adjust Panel Latches clearance (Refer to para 2-3.2.d).

e) Safety Cable Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Clamping Ring, P/N R12.9.61.004.5, Q.ty 2 (as required).
     - Safety Cable, P/N R12.9.61.004.6, Q.ty 1.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Safety Cable, proceed as follows (Refer to Figure 2-3.15):
  1. Position new safety cable (13) between the ceiling panel bracket (4) and the swivel hook (15) as shown in the figure.
  2. Install clamping rings (14) in order to lock safety cable (13).
  3. Install the involved panel (Refer to the related para 2-3.2.d).

f) Latch - Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Latch, proceed as follows (Refer to Figure 2-3.15):
  1. Position latch (11) on the panel.
  2. Install and tighten special nut (10).
  3. Position lever (9) and lock it by installing screw (7) and washer (8).
  4. Tighten screw (7) as required.
  5. Install the involved panel (Refer to the related para 2-3.2.d).
  6. Adjust panel latches clearance (Refer to para 2-3.2.i).

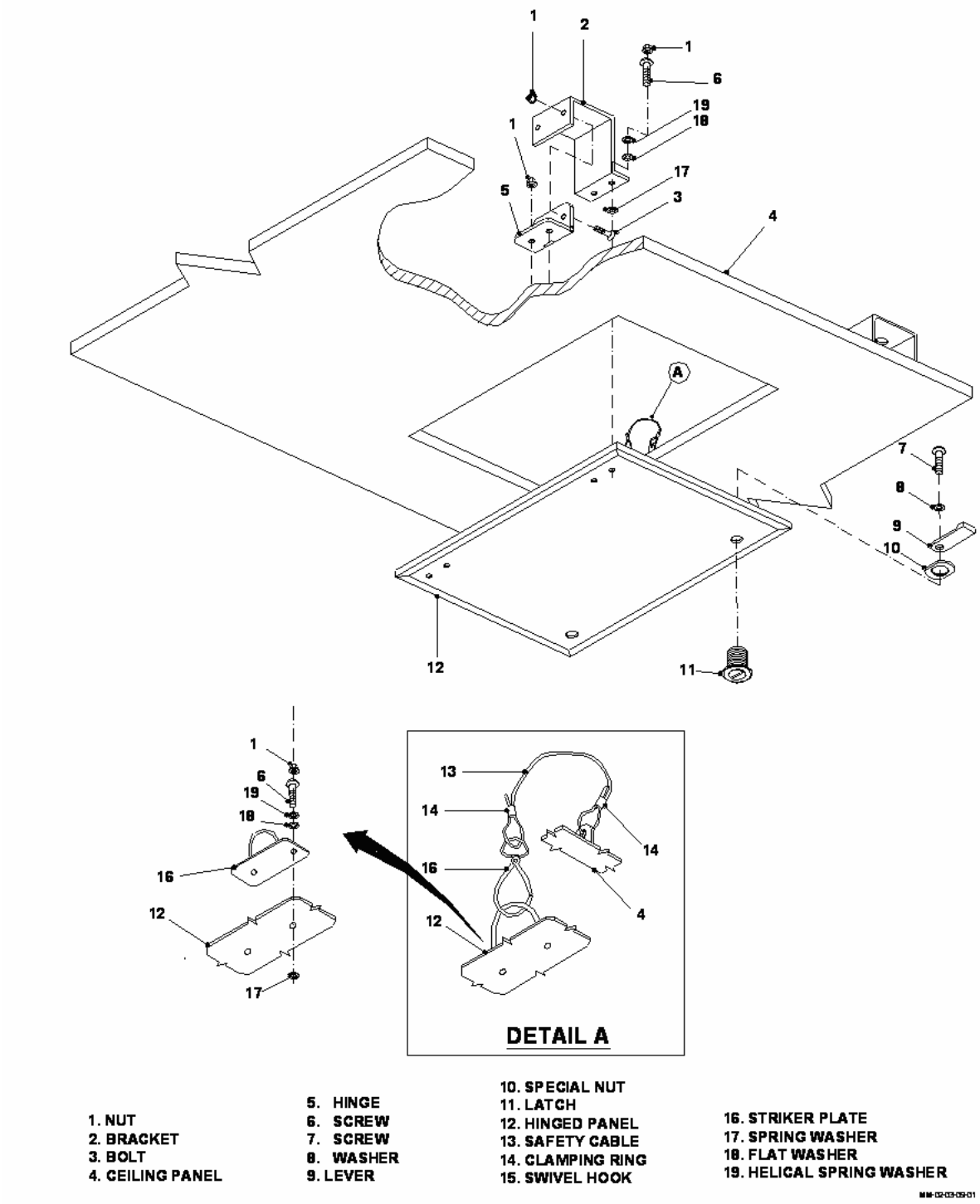


Figure 2-3.15 Hinged Panel - Typical Removal

2-3.2.i Adjustment/Test

a) Panel Latch Adjustment

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Shims.
- **Procedure.**

  To Adjust each Panel Latch clearance proceed as follows:
  1. Using the Maintenance Key remove the involved panel.
  2. Insert/remove shim(s) on each latch to adjust the clearance.
  3. Make sure that the latch is correctly installed.
  4. Install the panel and check that it closes using the Maintenance Key.

b) Test

Each Vehicle Door is provided with Entrance Walls (Refer to Figure 2-3.16) .
The Cab Entrance Wall is located at LH side of each Front Door.
The Low Floor Section Entrance Walls are located at both sides of each Center Door
fiberglass and is installed on the stanchion with screws and nuts.

2-3.3 Entrance Walls

2-3.3.a Description and Theory of Operation

Each Vehicle Door is provided with Entrance Walls (Refer to Figure 2-3.16) .
The Cab Entrance Wall is located at LH side of each Front Door.
The Low Floor Section Entrance Walls are located at both sides of each Center Door
Each type of Entrance Walls, incorporating one stanchion, is made with fiberglass and is installed on the stanchion with screws and nuts.

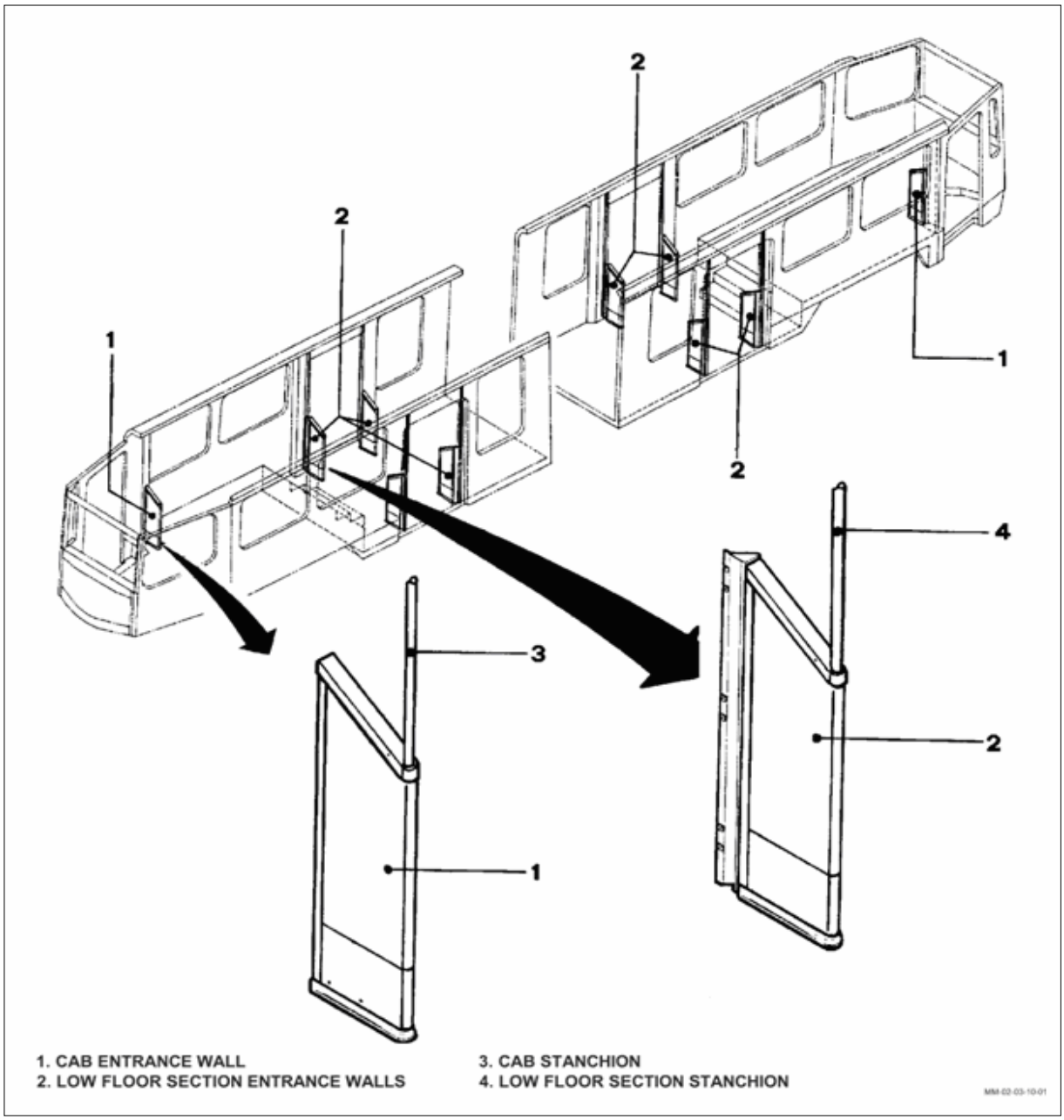


Figure 2-3.16 Entrance Walls – Location and Components

2-3.3.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORMING ENTRANCE WALLS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
> **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-3.3.c Fault Isolation

For Entrance Walls Fault Isolation procedure, refer to Table 2-3.9.

Table 2-3.9 Entrance Walls - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten.
2. Entrance Walls Panels damaged.	1. Vandalism/Impact.	1. Replace. Refer to para 2-3.3.d.
3. Entrance Walls paint damaged.	1. Vandalism.	1. Perform painting procedure. Refer to para 2-3.3.e.

2-3.3.d Disassembly

The Entrance Walls Removal procedures consist in the following main operations:

– Cab Entrance Wall Removal.

– Low Floor Section Entrance Walls Removal.

– Frame (Low Floor Section Entrance Walls) Removal.

a) Cab Entrance Wall Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - MBTA approved Adhesive Removal (commercial).

- **Procedure.**

  To Remove each Cab Entrance Wall, proceed as follows (Refer to Figure 2-3.17):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove Stanchion (Refer to para 2-3.1.d).
  3. Pull up the handrail (4).
  4. Remove screws (1).
  5. Remove entrance wall (5) and gasket (6).
  6. Remove frames (2, 3) by using adhesive removal.

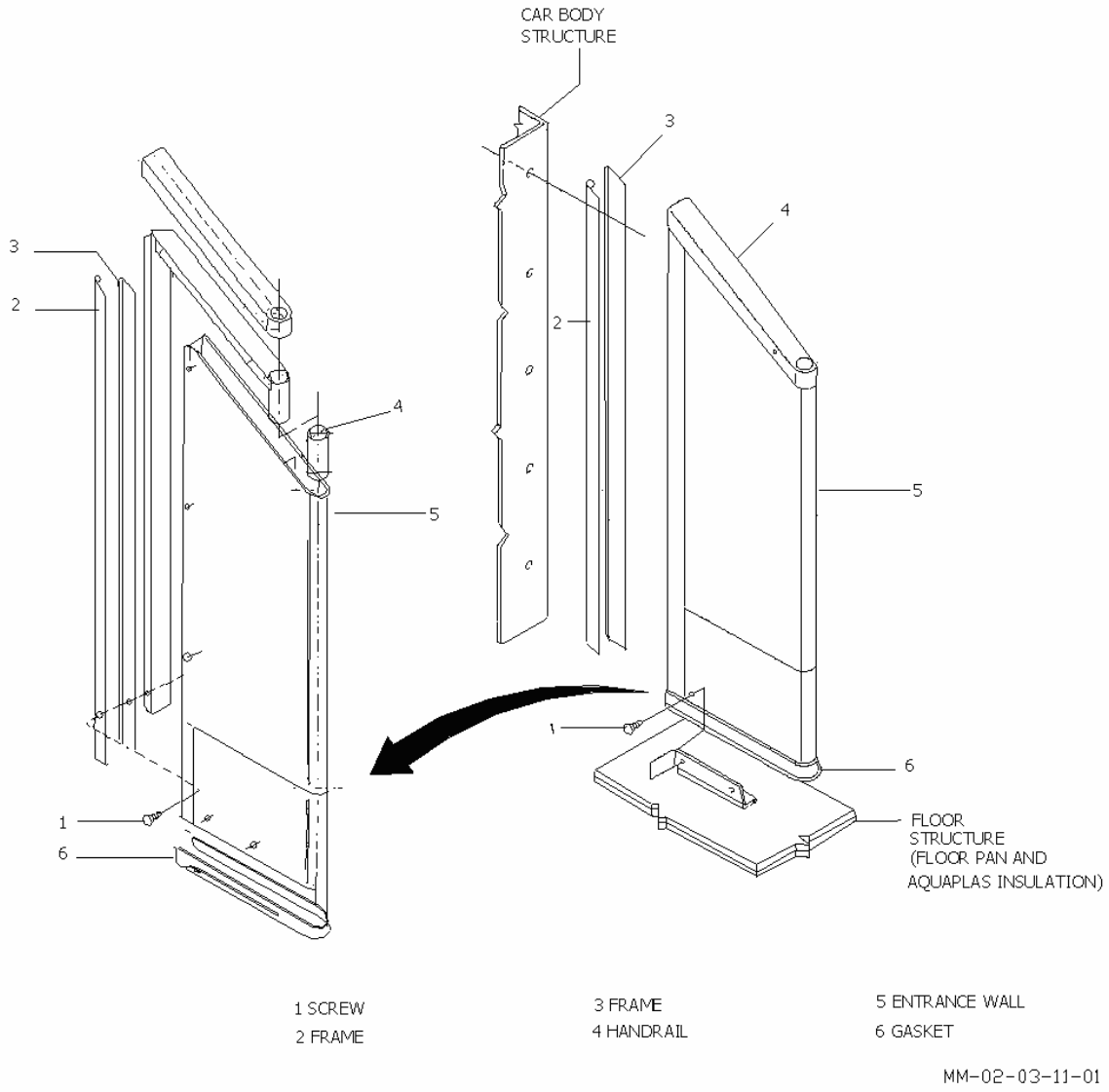


Figure 2-3.17 Cab Entrance Wall – Removal

b) Low Floor Section Entrance Walls Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Low Floor Section Entrance Wall, proceed as follows (Refer to Figure 2-3.18):

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Remove stanchion (Refer to para 2-3.1.d).
3. Remove screws (1).
4. Remove frame (2).
5. Remove screws (7).
6. Remove entrance wall (3).
7. Remove gasket (4).

c) Frame (Low Floor Section Entrance Walls) Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Frame (Low Floor Section Entrance Wall), proceed as follows (Refer to Figure 2-3.18):

  1. Remove screws (1) and washers (8, 9).
  2. Remove frame (6) with plate (5).

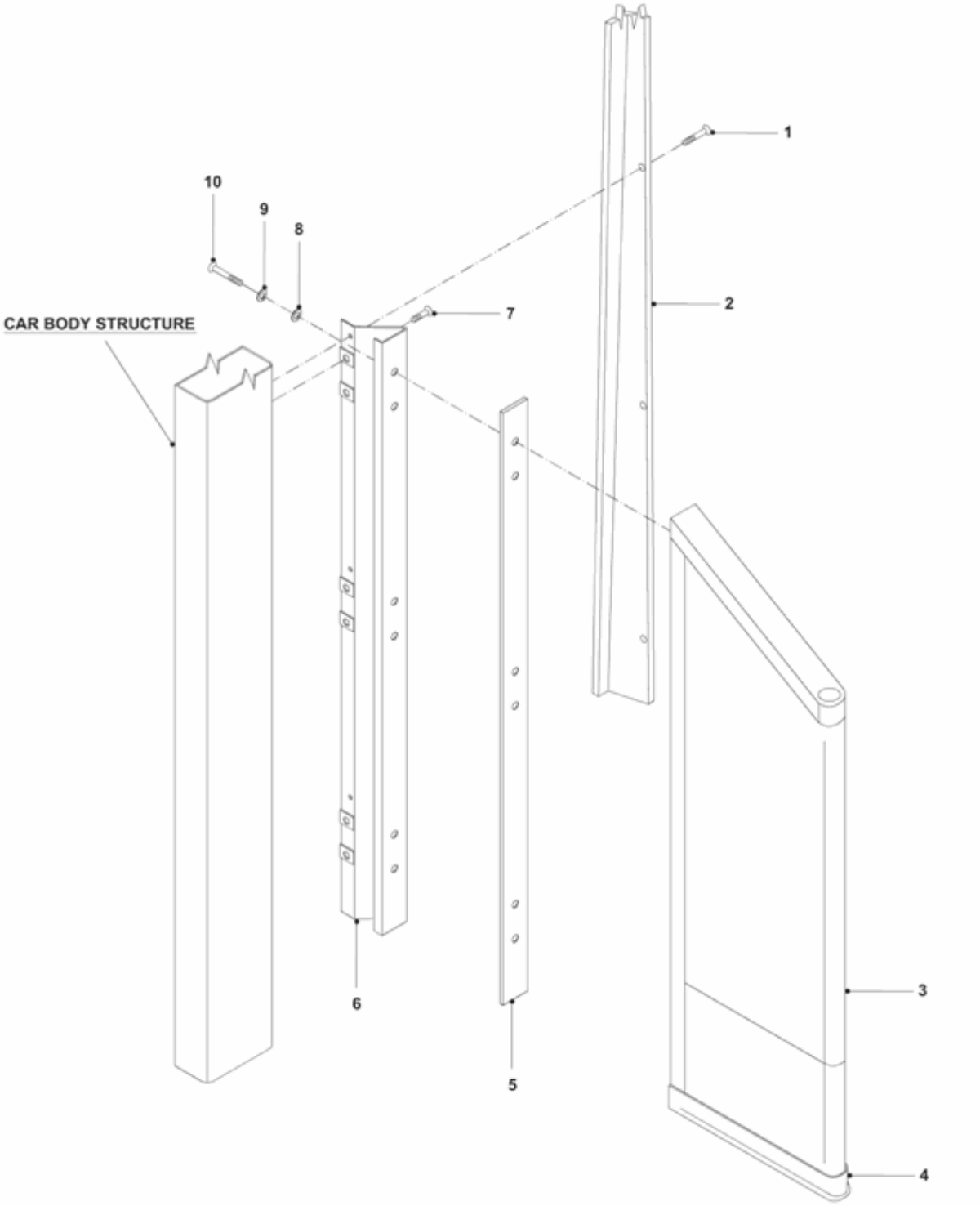

CAR BODY STRUCTURE
1
2
3
4
5
6
7
8
9
10
1. SCREW
2. FRAME
3. ENTRANCE WALL
4. GASKET
5. PLATE
6. FRAME
7. SCREW
8. FLAT WASHER
9. SPRING WASHER
10. SCREW
SMOM-02-03-19-01

Figure 2-3.18 Low Floor Section Entrance Walls – Removal

2-3.3.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

Cab Door Entrance Wall

To Clean each Cab Door Entrance Wall proceed as follows:

1. Clean Entrance Wall using cleaning rags and mild detergent diluted in water.

Low Floor Section Entrance Walls

To Clean each Low Floor Section Entrance Wall proceed as follows:

1. Clean Entrance Wall using cleaning rags and mild detergent diluted in water.

b) Painting

For Entrance Wall Painting, refer to para 2-2.e.

2-3.3.f Inspection

- **Reference Information.**
  1. Tools / Equipment. (Not Applicable).
  2. Material (Not Applicable).

Cab Entrance Wall

- **Procedure.**

To Inspect each Cab Door Entrance Wall proceed as follows:

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Inspect Entrance Wall for dents, cracks or otherwise damages.
3. Inspect Entrance Wall for loose / missing hardware and correct installation
4. Inspect Floor Lights (Front Door) for loose / missing hardware and correct installation.
5. Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations

Low Floor Section Entrance Walls

- **Procedure.**

To Inspect each Low Floor Section Entrance Wall proceed as follows :

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Inspect Low Floor Section Entrance Wall for dents, cracks or otherwise damages.
3. Inspect Low Floor Section Entrance Wall for loose / missing hardware and correct installation.
4. Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.3.g Repair

Entrance Walls Repair procedure is the same as that described for liners panels repair. Refer to para 2-2.2.g.

2-3.3.h Reassembly

The Entrance Walls Installation procedures consist in the following main operations:

– Cab Entrance Wall Installation.
– Frame (Low Floor Section Entrance Walls) Installation.
– Low Floor Section Entrance Walls Installation.

a) Cab Entrance Wall Installation

- **Reference Information.**

1. Tools /Equipment.

- MBTA Overhaul Standard Tools Kit.

2. Material.
   - MBTA approved Adhesive Tape.
   - Loctite.

- **Procedure.**

To install each Cab Entrance Wall, proceed as follows (Refer to Figure 2-3.19):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Apply Loctite and install gasket (6).
3. Glue frames (2, 3) to the entrance wall.
4. Position entrance wall (5) in proper seat.
5. Install and thigten screws (1).
6. Insert handrail (4).
7. Install stanchion (Refer to para 2-3.1.h).

Low Floor Section Entrance Walls

- **Procedure.**

To Inspect each Low Floor Section Entrance Wall proceed as follows :

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Inspect Low Floor Section Entrance Wall for dents, cracks or otherwise damages.
3. Inspect Low Floor Section Entrance Wall for loose / missing hardware and correct installation.

Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations

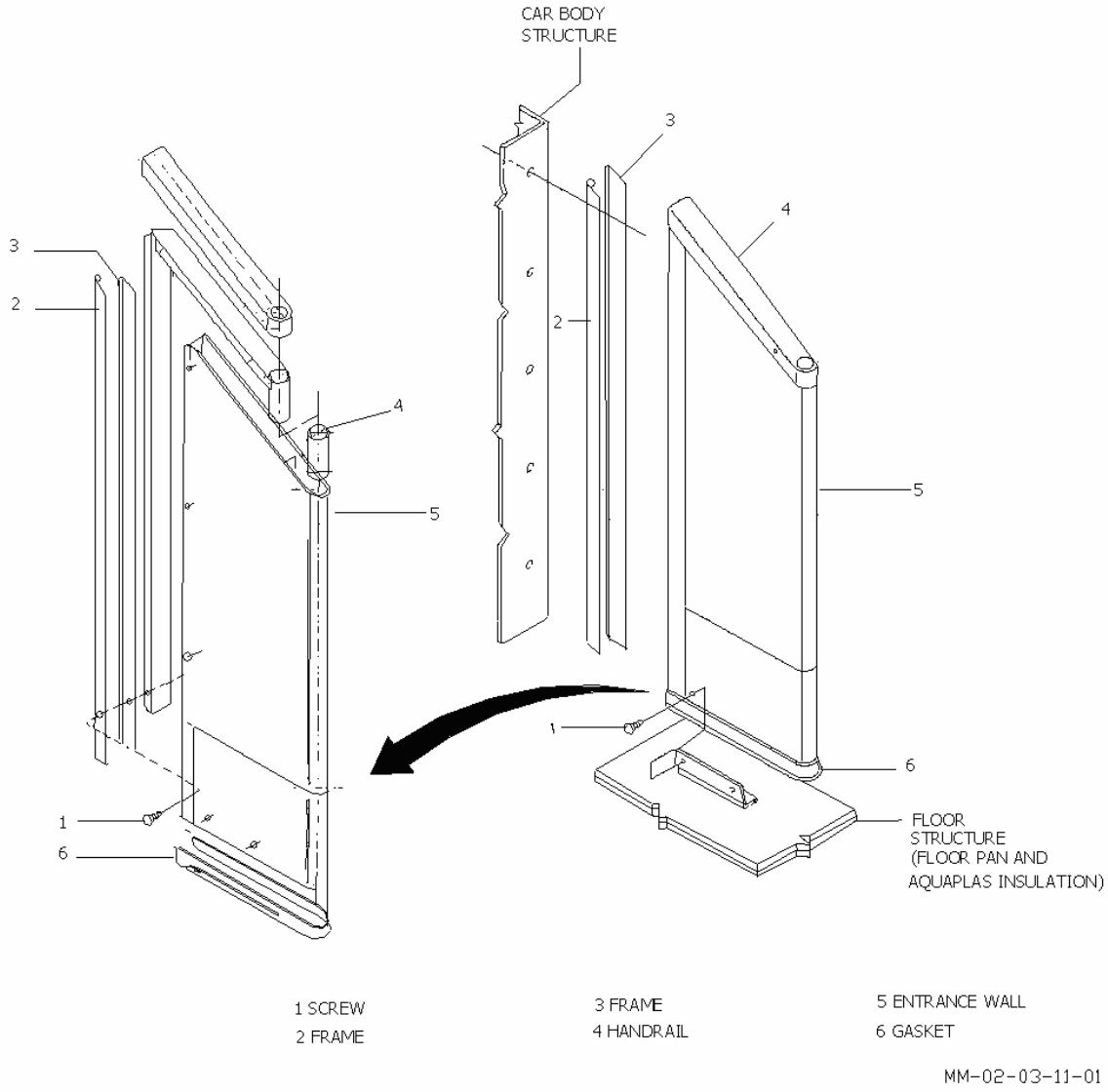


Figure 2-3.19 Cab Entrance Wall – Installation

b) Frame (Low Floor Section Entrance Walls) Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

To Install Frame (Low Floor Section Entrance Wall), proceed as follows (Refer to Figure 2-3.20):

1. Position plate (5) and frame (6) to the wall structure.
2. Install screws (1) and washers (8, 9).
3. Tighten screws (1) to **7 lb-ft (9,5 Nm)**.

c) Low Floor Section Entrance Walls Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material.
   - Loctite.

- **Procedure.**

To Install each Low Floor Section Entrance Wall, proceed as follows (Refer to Figure 2-3.20):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Apply Loctite and install gasket (4) in the related seat.
3. Position entrance wall (3) in proper position.
4. Install screws (5) and tighten to **7 lb-ft (9,5 Nm)**.
5. Position frame (2).
6. Install screws (1) and tighten to **7 lb-ft (9,5 Nm)**.
7. Install stanchion (Refer to para 2-3.1.h).

2-3.3.i Adjustment/Test (Not Applicable)

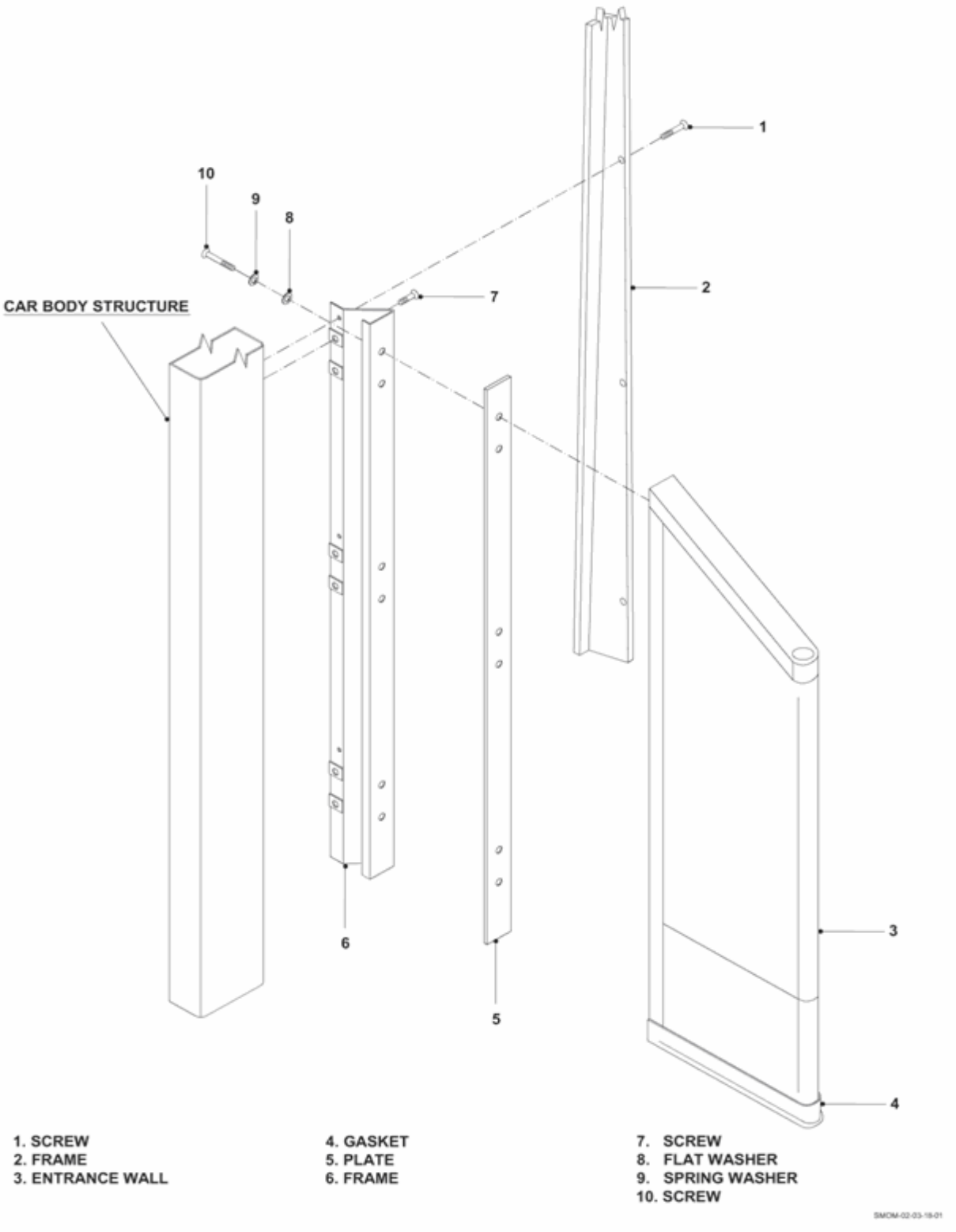


Figure 2-3.20 Low Floor Section Entrance Walls – Installation

2-3.4 Passenger Seats

2-3.4.a Description and Theory of Operation

The vehicle is provided with different types of passenger seats, transversal, longitudinal and box pads, for a total amount of 44 seats: 17 seats for each sections "A" or "B" and 6 seats and 4 box pads for Articulation Section.

The passenger seats assemblies are overhanging from sidewall in order to facilitate the cleaning operations, and are provided with handrails for passenger safety. The vehicle seats layout is shown in Figure 2-3.21. Each seat assembly consists of: metallic frame (installed to the sidewalls through bolts) and pre-formed, fiberglass-reinforced, plastic shells fixed to the seat frame, Seat Cushions and Seat Back Inserts.

The seats are also provided with Fairings (8) that covers the Floor Heaters. For Floor Heater System Decription, Operation and Maintenance procedures refer to Section 5.

The Seat Cushions and the Seat Back Inserts, vandal resistant and removable, provide respectively for bottom and back installation, contoured for maximum comfort.

All Seat Cushions and Seat Back Inserts are made of fire retardant materials and are fully interchangeable.

The passenger seat types are: Transversal, Longitudinal and Box pads.

The seat assemblies data is:

- 3 Passengers Seat Qty on board vehicle . . . . . 3 Seats per assembly 3	- 1 Passenger Transversal Cant. Seat Qty on board vehicle . . . . . 4 Seats per assembly 1
- 5 Passengers Seat Qty on board vehicle . . . . . 4 Seats per assembly 5	- Passenger Pad Seat Qty on board vehicle . . . . . 4 Seats per assembly 1
- 1 Passenger Longitudinal Cant. Seat Qty on board vehicle . . . . . 2 Seats per assembly 1	- 3 Passengers Cant. Seat Qty on board vehicle . . . . . 1 Seats per assembly 3
- 1 Passenger Seat Qty on board vehicle . . . . . 2 Seats per assembly 1	

NOTE: For Heater Protection Description, Operation and Maintenance procedures, refer to para 2-3.8

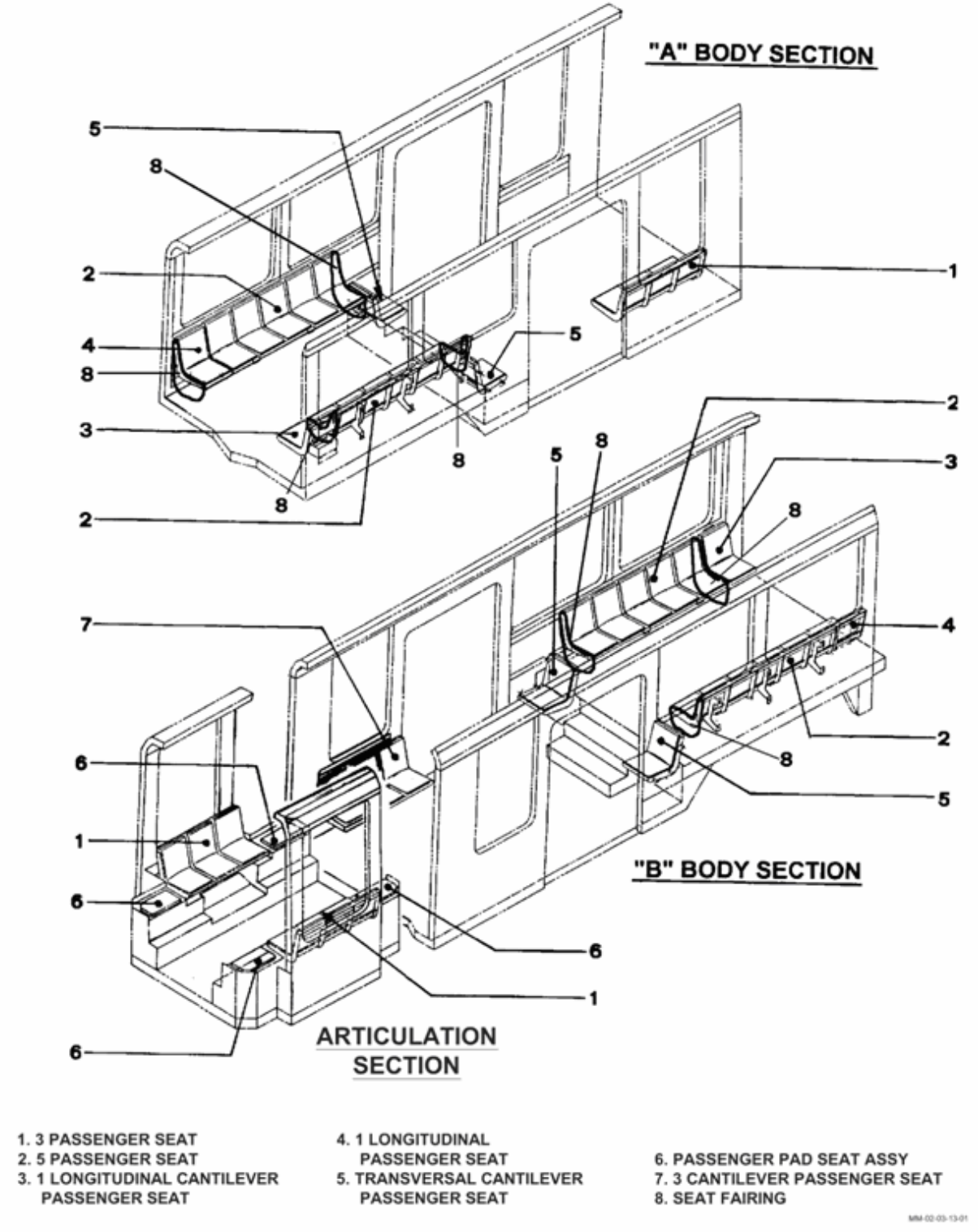

"A" BODY SECTION
"B" BODY SECTION
ARTICULATION SECTION
1. 3 PASSENGER SEAT
2. 5 PASSENGER SEAT
3. 1 LONGITUDINAL CANTILEVER PASSENGER SEAT
4. 1 LONGITUDINAL PASSENGER SEAT
5. TRANSVERSAL CANTILEVER PASSENGER SEAT
6. PASSENGER PAD SEAT ASSY
7. 3 CANTILEVER PASSENGER SEAT
8. SEAT FAIRING

Figure 2-3.21 Passenger Seats - Location

2-3.4.b Specific Safety Precautions (Not Applicable)

2-3.4.c Fault Isolation

For Passenger Seat Fault Isolation, refer to Table 2-3.10.

Table 2-3.10 Passenger Seats - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Attaching parts loose.	1. Vibrations.	1. Fasten.
2. Seat frame damaged.	1. Vandalism.	1. Replace.
3. Seat insert damaged.	1. Vandalism.	1. Replace.
4. Cushions damaged.	1. Vandalism.	1. Replace.

2-3.4.d Disassembly

The Passenger Seats Removal procedures consist in the following main operations:

- Transversal Cantilever Passenger Seat Removal.
- 5 Passengers Seat – Typical Removal.
- 3 Passengers Seat – Typical Removal.
- 1 Longitudinal Cantilever Passenger Seat – Typical Removal.
- 3 Cantilever Passengers Seat Removal.
- Passenger Pad Seat - Typical Removal.
- Seat Cushion and Seat Back Insert (Set) - Typical Removal.
- Seat Fairing Removal.

a) Transversal Cantilever Passenger Seat Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Transversal Cantilever Passenger Seat, proceed as follows (Refer to Figure 2-3.22):

  1. Support seat (1).
  2. Remove bolts (2) and washers (3, 4).
  3. Remove seat assembly (1), from car body structure.

NOTE: Plate (5) is glued to the sidewall. It is not necessary remove it.

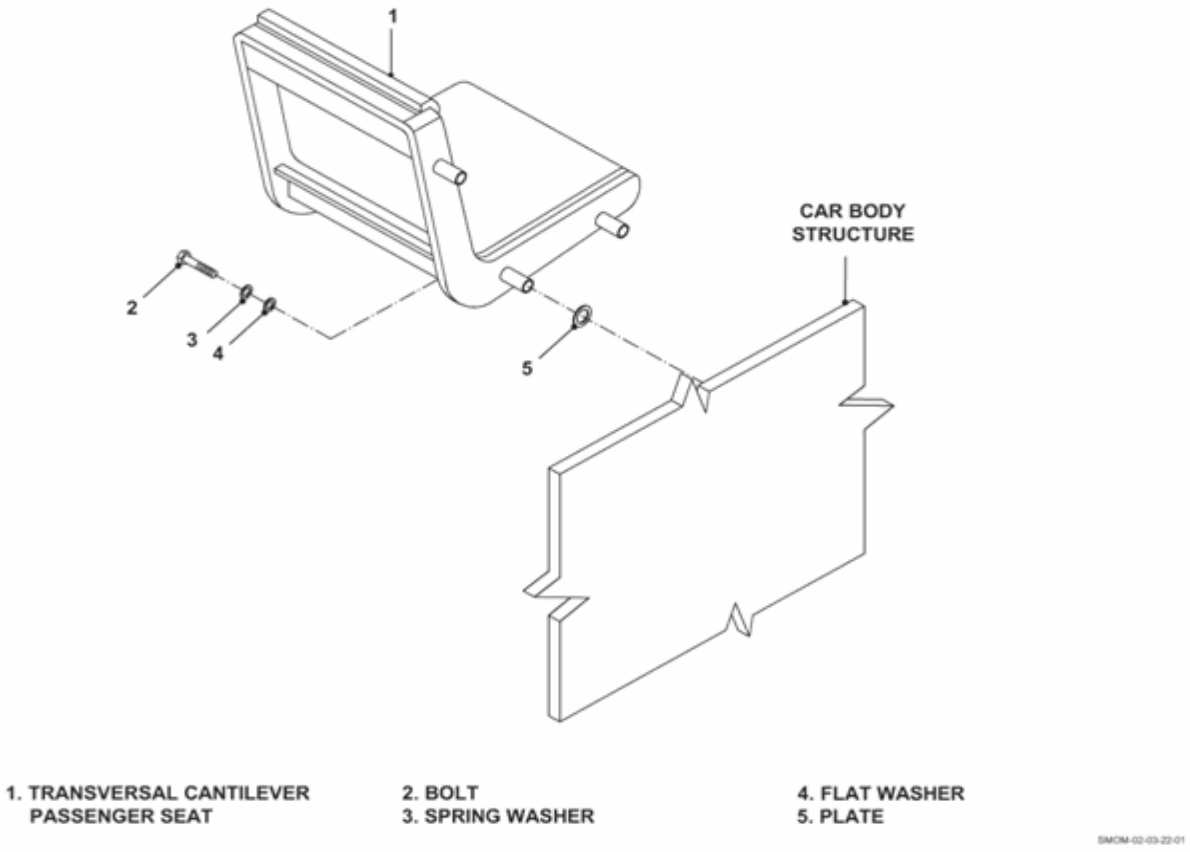


Figure 2-3.22 Transversal Cantilever Passenger Seat – Typical Removal

b) 5 Passengers Seat – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each 5 Passengers Seat, proceed as follows (Refer to Figure 2-3.23):

WARNING:	**5 PASSENGER SEAT WEIGHS 111 LB (50.3 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Support seat (5).
  2. Remove screws (1), washers (2, 3) and spacers (4).
  3. Remove seat assembly (5).

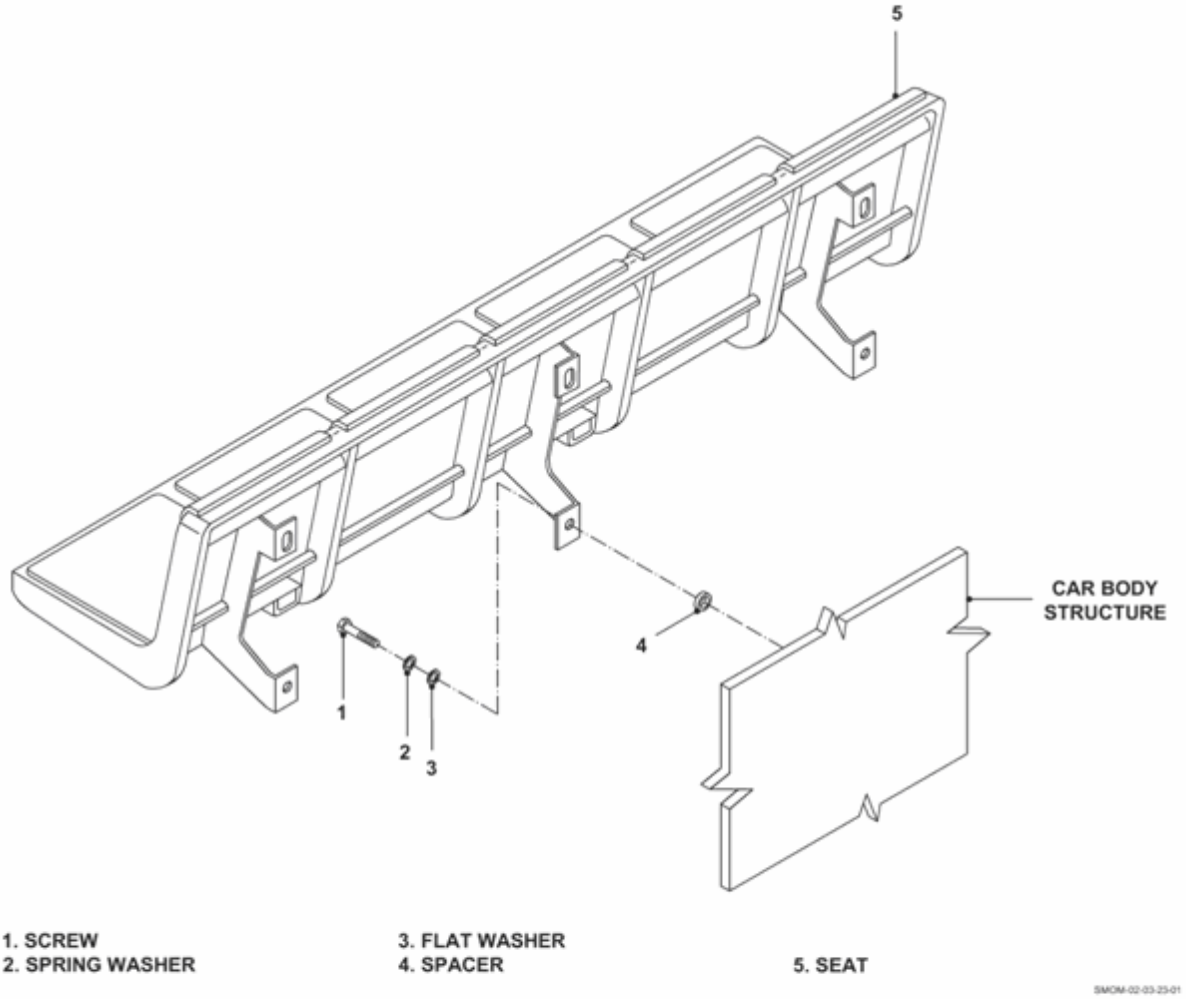


Figure 2-3.23 5 Passengers Seat – Typical Removal

c) 3 Passengers Seat – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each 3 Passengers Seat, proceed as follows (Refer to Figure 2-3.24):

> **WARNING:** **3 PASSENGER SEAT WEIGHS 65 LB (29 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Remove Heater Protection (Refer to para 2-3.9.d d))
  2. Support seat (4).
  3. Remove the bolt (1) and washers (2, 3).
  4. Remove seat assembly (4).

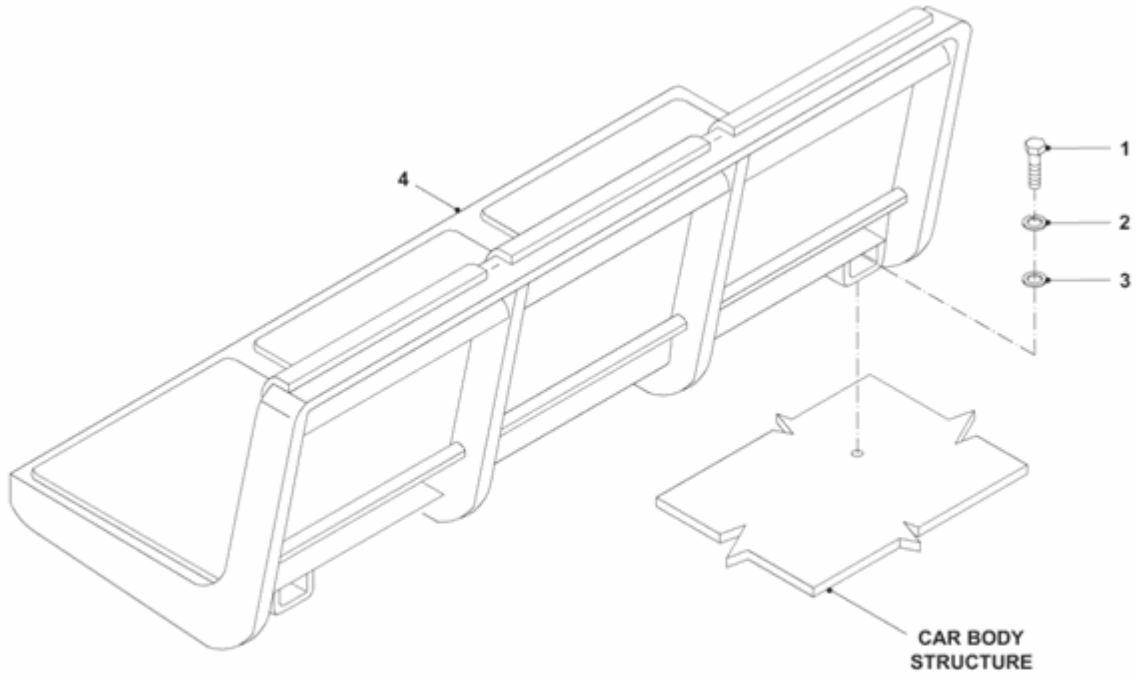


Figure 2-3.24 3 Passengers Seat – Typical Removal

d) 1 Longitudinal Cantilever Passenger Seat – Typical Removal

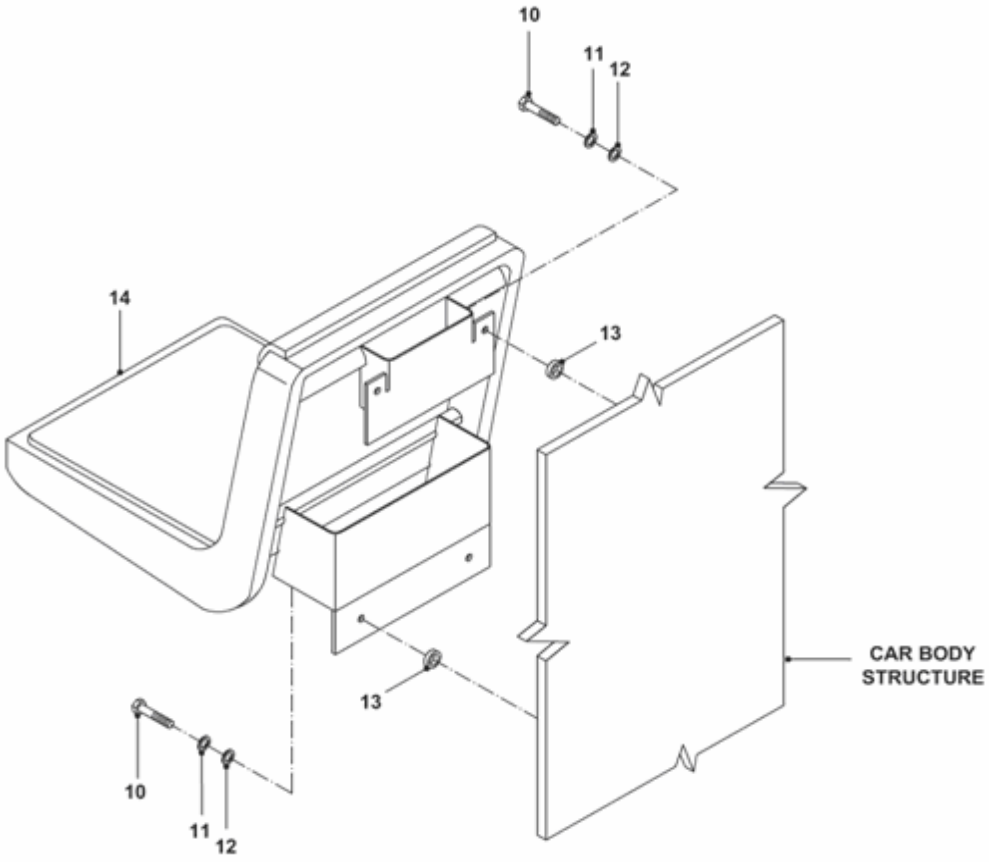
- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each 1 Longitudinal Cantilever Passengers Seat, proceed as follows (Refer to Figure 2-3.25):

  1. Remove the screws (1), washers (2, 3) and nuts (4).

     NOTE: Shim (5) is self-adhesive type. It is not necessary remove it.

  2. Remove the bolts (6), washers (7, 8).
  3. Remove seat assembly (9) from “A” or “B” Body Section left side.
  4. Support seat assembly (14).
  5. Remove screws (10), washers (11, 12) and spacer (13).
  6. Remove seat assembly (14) from “A” or “B” Body Section right side.



1. SCREW
2. WASHER
3. WASHER
4. NUT
5. SHIM
6. BOLT
7. WASHER
8. WASHER
9. SEAT
10. SCREW
11. WASHER
12. WASHER
13. SPACER
14. SEAT

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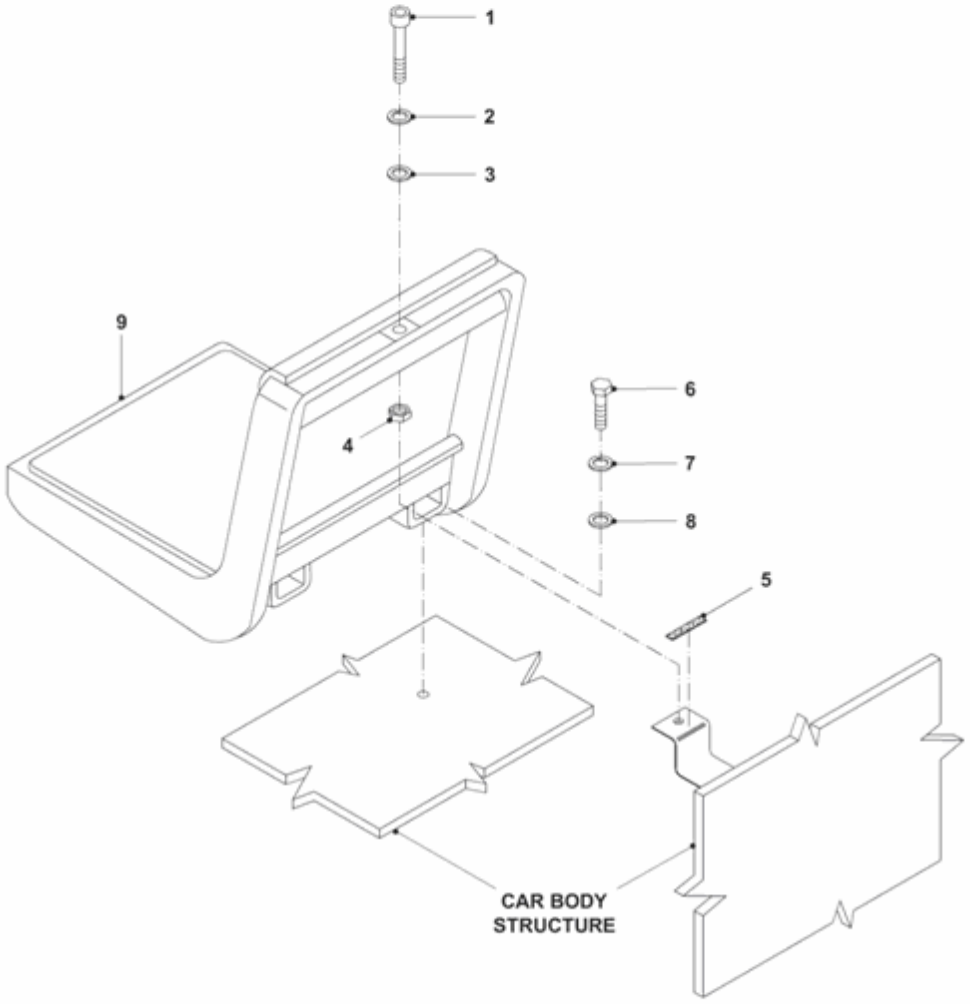
Figure 2-3.25 1 Longitudinal Cantilever Passengers Seat – Typical Removal (Sheet 1 of 2)



1. SCREW
2. WASHER
3. WASHER
4. NUT
5. SHIM
6. BOLT
7. WASHER
8. WASHER
9. SEAT
10. SCREW
11. WASHER
12. WASHER
13. SPACER
14. SEAT

Figure 2-3.25 1 Longitudinal Cantilever Passengers Seat – (Sheet 2 of 2)

Typical Removal

e) 3 Cantilever Passengers Seat Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove 3 Cantilever Passengers Seat, proceed as follows, (Refer to Figure 2-3.26):

> **WARNING:** **3 CANTILEVER PASSENGER SEAT WEIGHS 65 LB (29.4 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Remove Heater Protection (Refer to para 2-3.9.d e))
2. Support seat assembly (5).
3. Remove bolts (1), nuts (4) and washers (2, 3) from upper and lower side.
4. Remove seat assembly (5).
5. If necessary, remove supports (6, 8) by removing bolts (7) and washers (2, 3).

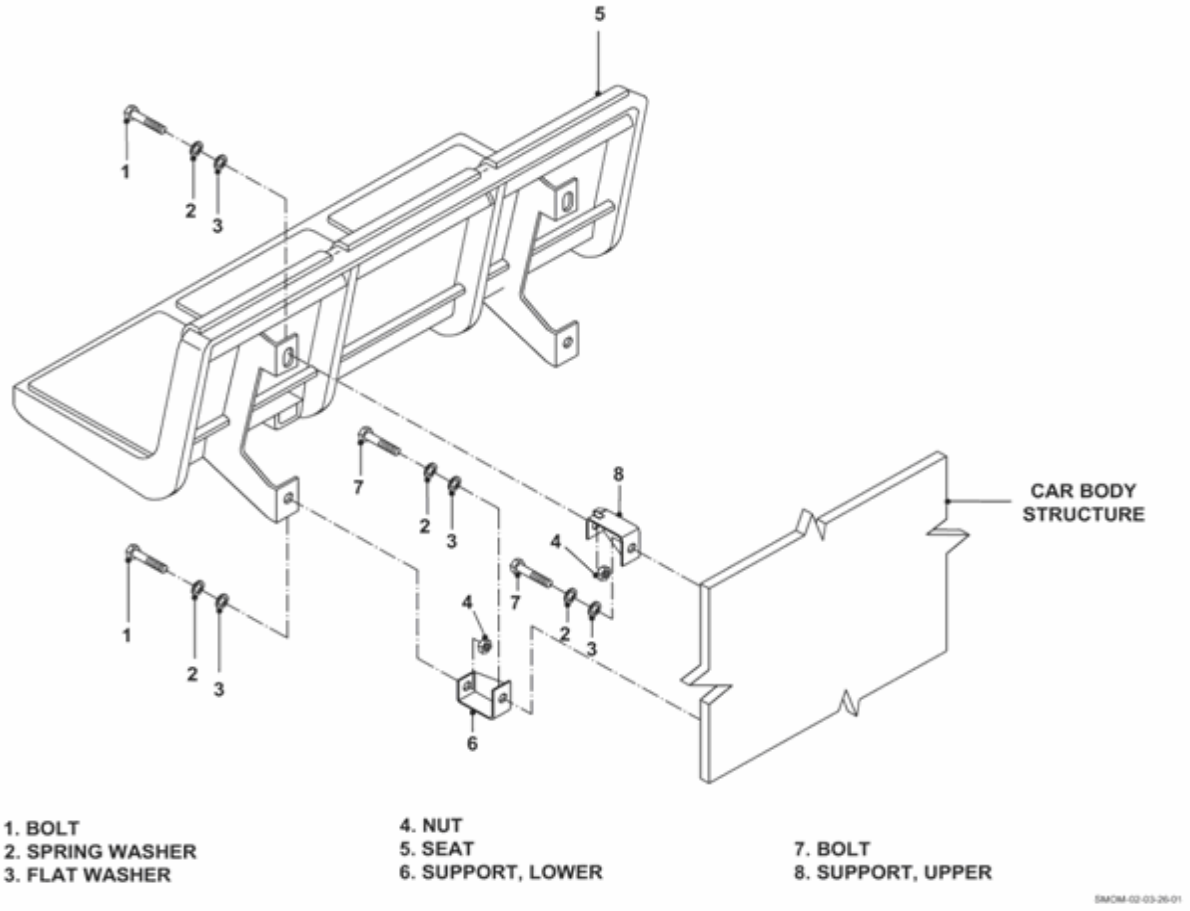


Figure 2-3.26 3 Cantilever Passengers Seat – Typical Removal

f) Passenger Pad Seat - Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To remove each Passenger Pad Seat, proceed as follows, (Refer to Figure 2-3.27):
  1. Remove screws (1) and washers (2, 3).
  2. Remove the box pads (4 or 5).

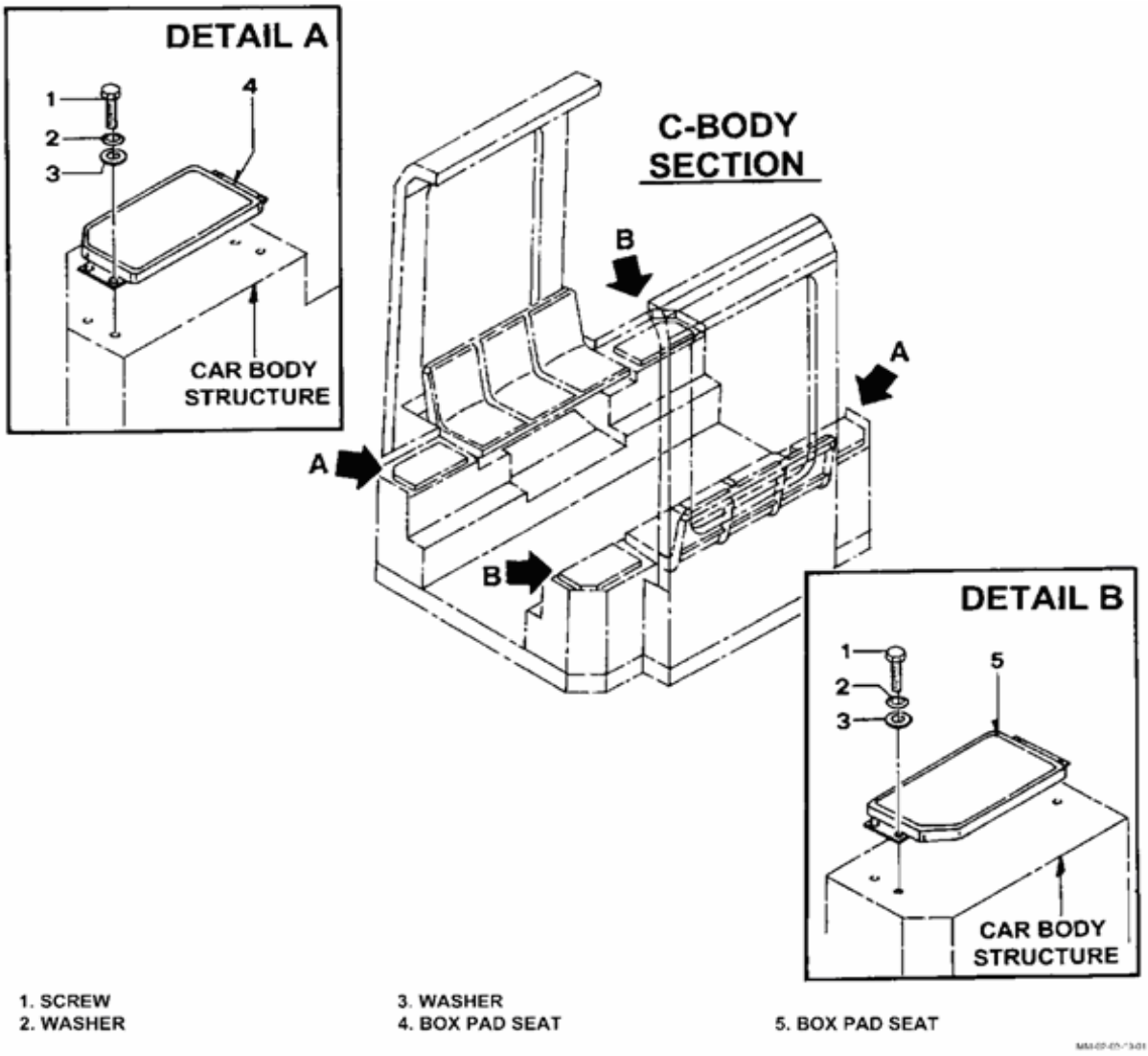


Figure 2-3.27 Passenger Pad Seat – Typical Removal

g) Seat Cushion and Seat Back Insert (Set) - Typical Removal

Each Passengers Seat is provided with (1 through 5) Set of vinyl Seat Cushion and Seat Back Insert, each one equipped with Plug In Extensions to be fitted in the relevant slot of the Seat Frame, (Refer to Figure 2-3.28).

- **Reference Information.**

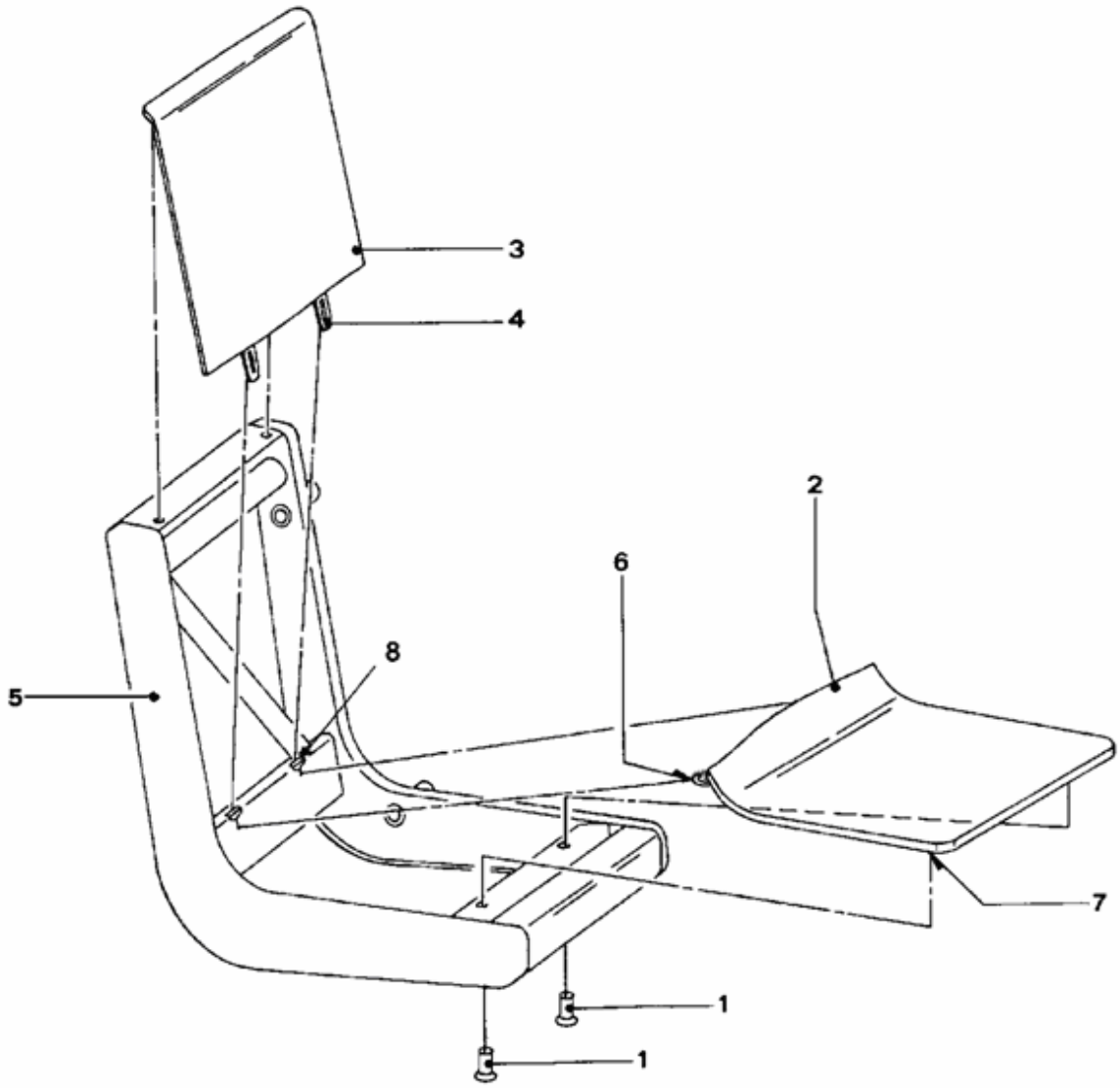
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Set, proceed as follows, (Refer to Figure 2-3.28):

  NOTE: The Plug In Extensions of both Seat Cushion and Seat Back Insert are designed in order to make not possible the Seat Back Insert removal without remove first the Seat Cushion.

  1. Drill rivets (1) using standard tools as for standard workshop practices.
  2. Remove the Seat Cushions (2).
  3. Remove the Seat Back Insert (3).



1. RIVET
2. SEAT CUSHION INSERT
3. SEAT BACK INSERT
4. PLUG IN EXTENSION
5. FRAME
6. PLUG IN EXTENSION
7. SEAT TABS
8. SLOT

Figure 2-3.28 Seat Cushion and Seat Back Insert (Set) – Typical Removal

h) Seat Fairing Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Seat Fairing, proceed as follows (Refer to Figure 2-3.29):
  1. Remove screws (2 or 4).
  2. Remove seat fairing (1 or 3).

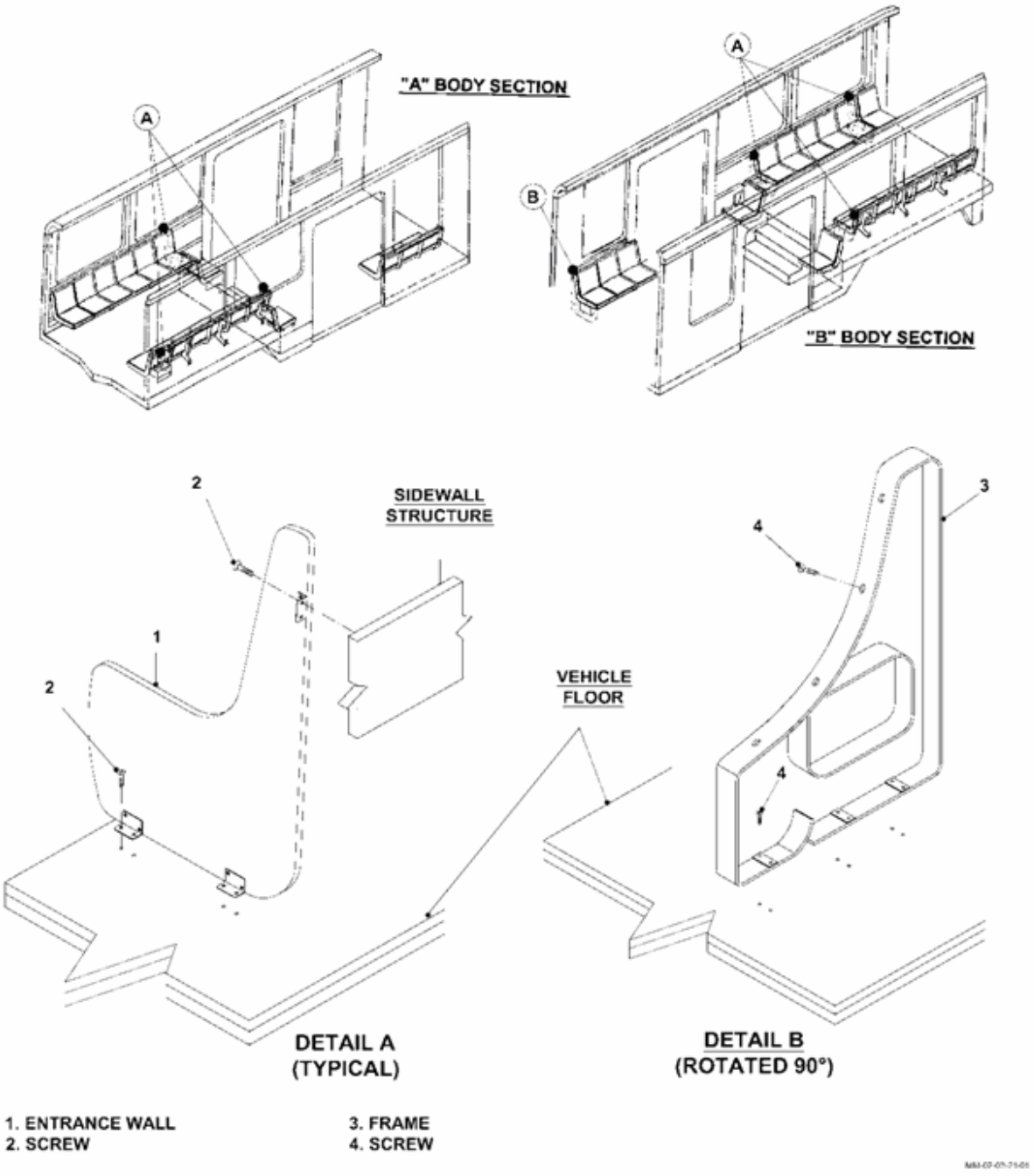


Figure 2-3.29 Seat Fairing – Typical Removal

2-3.4.e Cleaning/Painting

a) Cleaning

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1, Table 1-9).

- **Procedure.**

  To Clean Passenger Seat, proceed as follows:

WARNING:	**THE CLEANING OF SEAT INSERTS SHOULD ONLY BE PERFORMED IN A WELL VENTILATED AREA. USING APPROVING SAFETY PROCEDURES, METHODS AND CLEANING AGENTS. USE ONLY APPROVED CLEANING AGENT.** **THE INSTRUCTIONS ON THE CLEANING AGENT MUST BE STRICTLY FOLLOWED TO PREVENT PERSONAL INJURY AND DAMAGE TO THE SEAT ONSERTS. PROTECT SKIN AND EYES FROM CONTACT WITH ANY CLEANING AGENT.**

1. Using a clean sponge or cloth, apply a combination of warm water and mild household detergent such as No. 409 cleaner. You might also use a soft bristle brush after soap has been applied to surface. In case of imbedded dirt, use an abrasive cleaner such as Bon-Ami-R. Before surface dries, wipe with a clean, dry cloth to remove residue. Rinse with clean water and wipe with a clean dry cloth. This procedure may have to be repeated to remove stubborn dirt or stains.
   Ink can be often be removed by using alcohol. Paint, shoe polish and tar stains are best removed with Naphtha R or Kerosene on a clean white cloth. Remove chewing gum by first carefully scrapping surface. Naphtha or Kerosene should eliminate any remaining residue.

WARNING:	**DAMAGE TO VINYL MAY OCCUR IF HARSH SOLVENTS ARE USED. WHEN USING SOLVENTS, BE SURE TO USE ONLY SOLVENTS MENTIONED. STRONGER SOLVENTS MAY ATTACK VINYL.**

Any areas cleaned using the above methods should be rinsed with clear water and wiped with a clean dry cloth. For best results, all stains should be cleaned as quickly as possibly after they appear.

b) Painting (Not Applicable)

2-3.4.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Passenger Seat, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect passenger seat assemblies for scratches, cracks or damage.
  3. Inspect seat for correct installation.
  4. Inspections results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.4.g Repair

Damaged shell should be replaced. Repair is not applicable. Seat frame not seriously damaged can be repaired using standard tools, as in standard workshop practices.

Use the following for the repair of seat frames

- Different Welding techniques to repair seat frames.
- Maintain Surface finish of seat frames.
- Maintain the strength and structural integrity of seat frame.
- Remove the sharp edges & burrs of seat frames.

2-3.4.h Reassembly

The Passenger Seats Installation procedures consist in the following main operations:

- Transversal Cantilever Passenger Seat Installation.
- 5 Passengers Seat – Typical Installation.
- 3 Passengers Seat – Typical Installation.
- 1 Longitudinal Cantilever Passenger Seat – Typical Installation.
- 3 Cantilever Passengers Seat Installation.
- Passenger Pad Seat - Typical Installation.
- Seat Cushion and Seat Back Insert (Set) - Typical Installation.
- Seat Fairing Installation.

a) Transversal Cantilever Passenger Seat Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Nexus Glue (HENKEL EP 2000 Type) or equivalent.

- **Procedure.**

  To Install each Transversal Cantilever Passenger Seat, proceed as follows (Refer to Figure 2-3.30):

  1. Check that plates (5) are properly fixed to the sidewall. If necessary use Nexus glue (Henkel EP 2000 type) and follow specific Glue Manufacturer Instructions to restore plate fixing.
  2. Position seat and check seat alignment.
  3. Install washers (3, 4) and bolts (2).
  4. Tighten the screws (2) to **59 lb-ft (80 Nm)**.

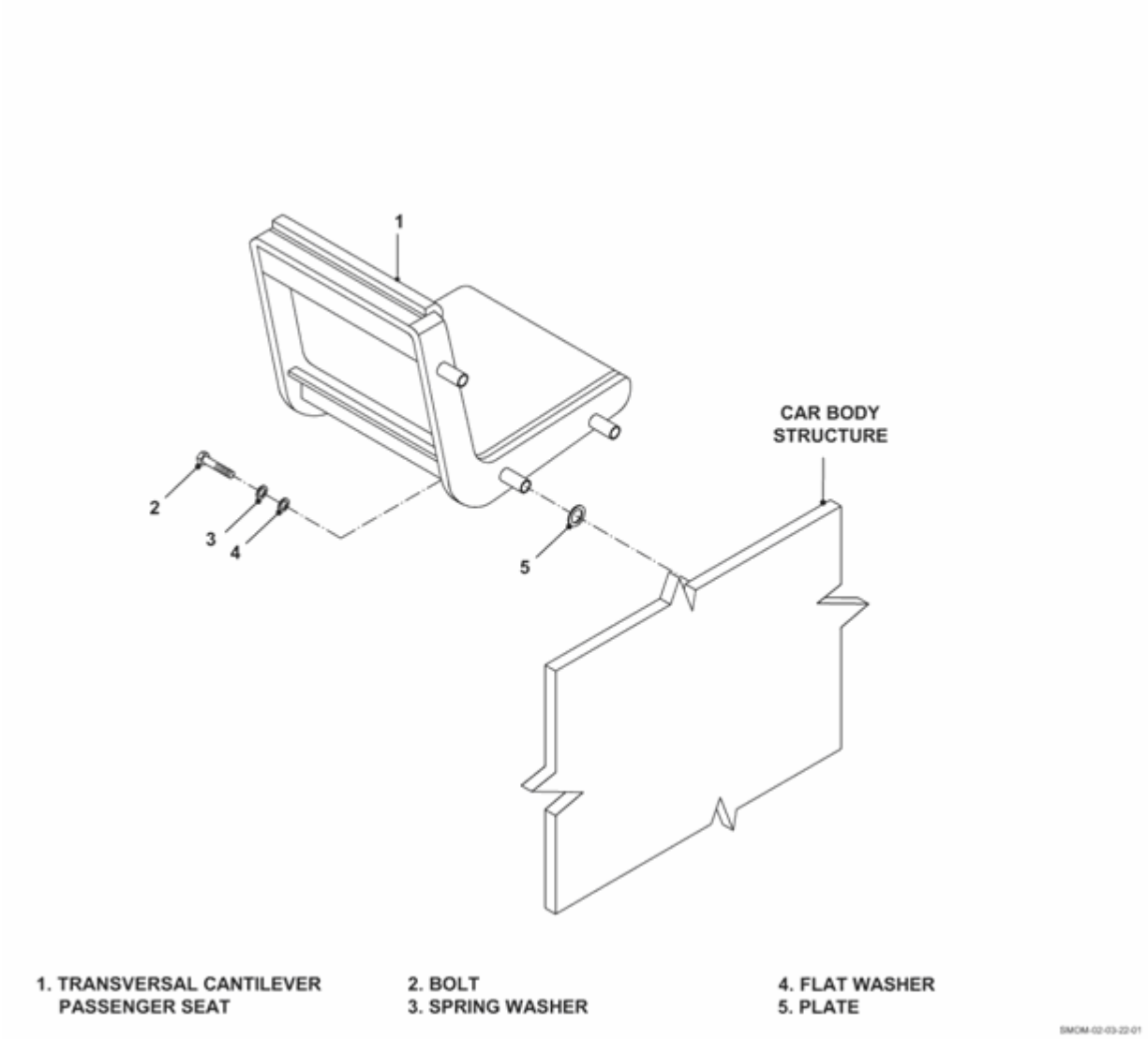


Figure 2-3.30 Transversal Cantilever Passenger Seat – Typical Installation

b) 5 Passengers Seat – Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each 5 Passengers Seat, proceed as follows (Refer to Figure 2-3.31):

> **WARNING:** **5 PASSENGER SEAT WEIGHS 111 LB (50.3 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Position the seat set (5) in proper position.
2. Position the spacer (4).
3. Install washers (3, 4) and screws (1).
4. Tighten screws (1) to to **59 lb-ft (80 Nm)**.

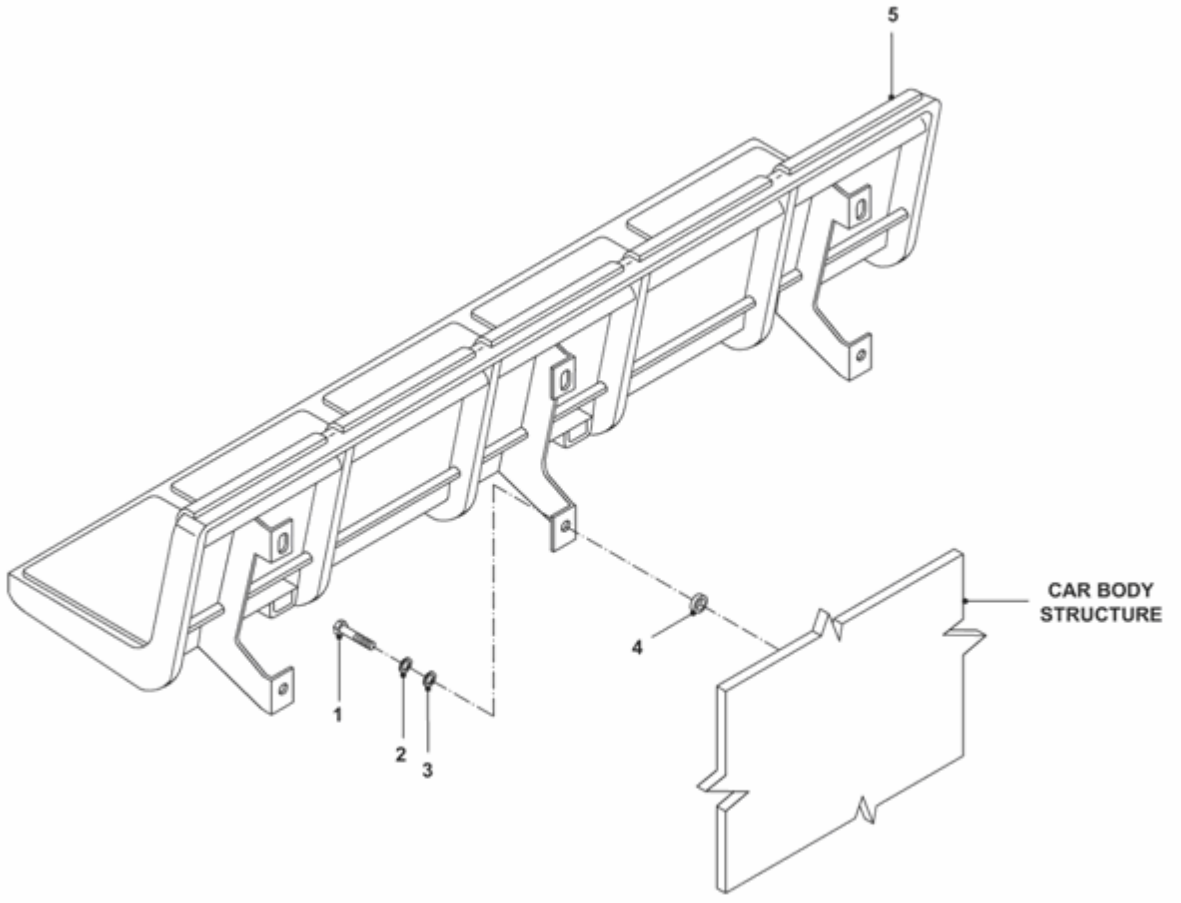


Figure 2-3.31 5 Passengers Seat – Typical Installation

c) 3 Passengers Seat – Typical Installation

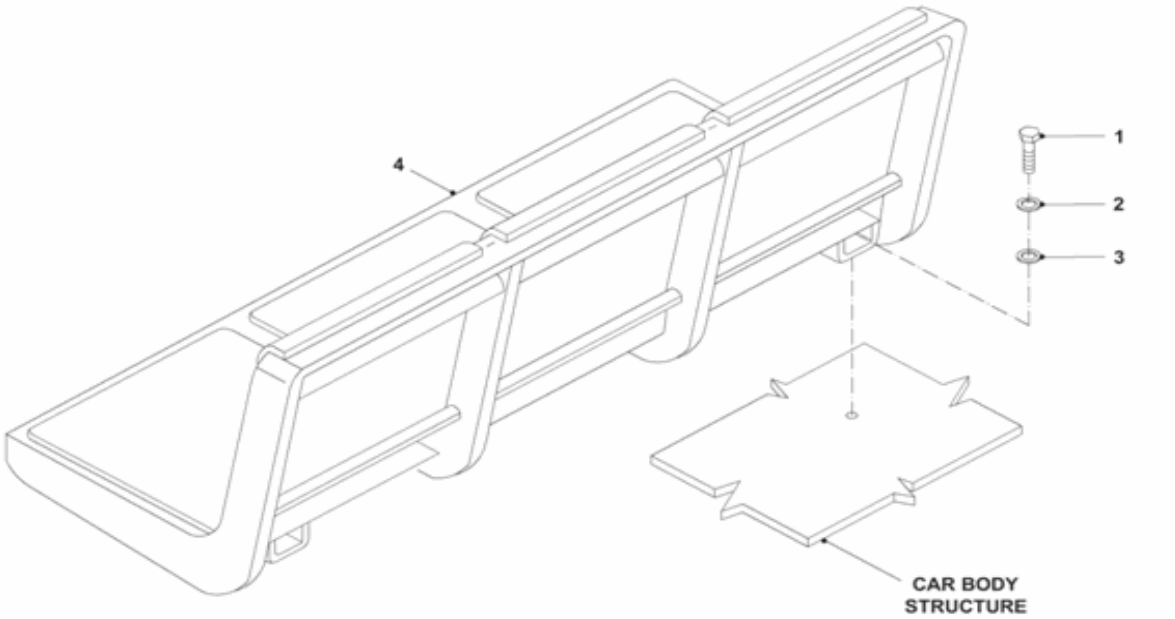
- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each 3 Passengers Seat, proceed as follows (Refer to Figure 2-3.32):

WARNING:	**3 PASSENGER SEAT WEIGHS 65 LB (29 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Position seat assembly (4) in proper position.
  2. Install washers (2, 3) and bolt (1).
  3. Tighten bolt (1) to **59 lb-ft (80 Nm)**.
  4. Install Heater Protection (Refer to para 2-3.9.h d))

Figure 2-3.32 3 Passengers Seat – Typical Installation



1. BOLT
2. SPRING WASHER
3. FLAT WASHER
4. SEAT

d) 1 Longitudinal Cantilever Passenger Seat – Typical Installation

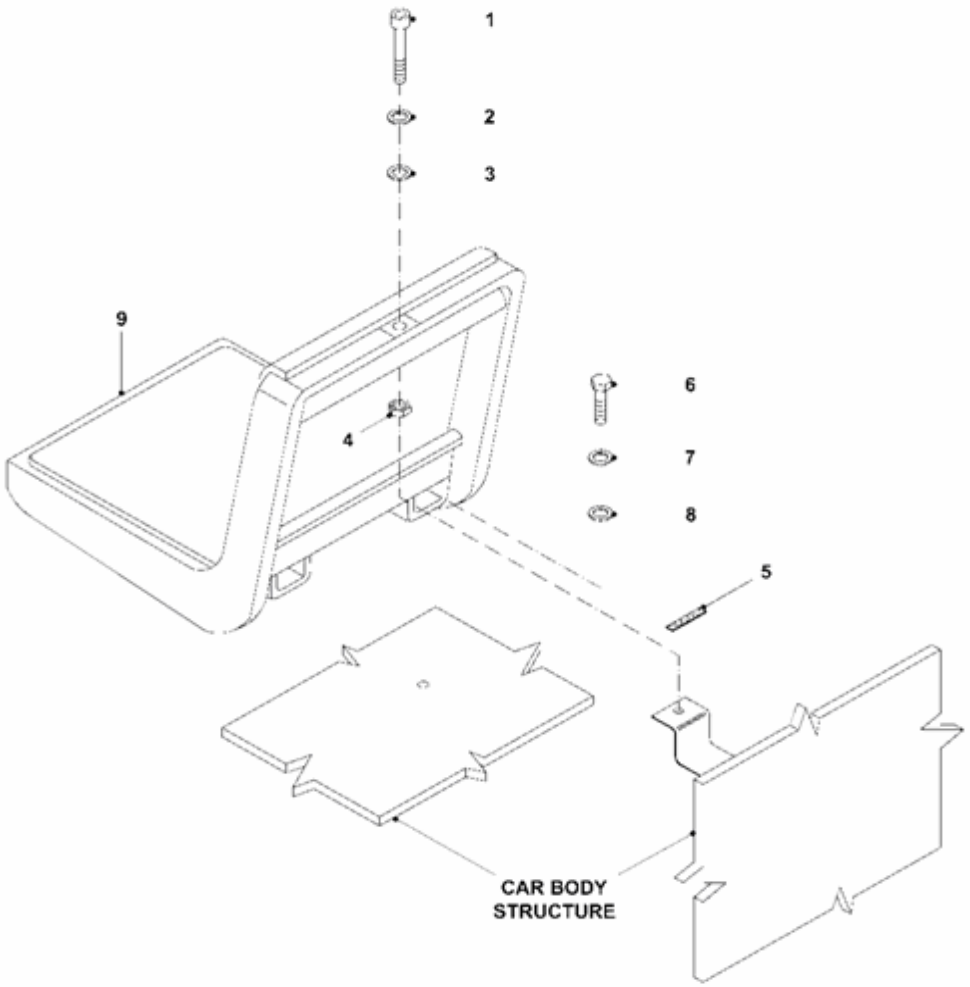
- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each 1 Longitudinal Cantilever Passengers Seat, proceed as follows (Refer to Figure 2-3.33):

  1. Position Seat Assembly (9) in proper position on “A” or “B” Body Section left side.
  2. Check rubber shim (5) condition. Replace if necessary installing it as shown in the figure.
  3. In upper side, install washers (2, 3) and screw (1).
  4. Tighten screw (1) to **59 lb-ft (80 Nm)**.
  5. In lower side, install washers (7, 8) and bolts (6).
  6. Tighten bolts (6) to **59 lb-ft (80 Nm)**.
  7. Position Seat Assembly (14) on “A” or “B” Body Section right side.
  8. Position the spacer (13) and install washers (11, 12) and screws (10).
  9. Tighten screws (10) to **59 lb-ft (80 Nm)**.



1. SCREW
2. WASHER
3. WASHER
4. NUT
5. SHIM
6. BOLT
7. WASHER
8. WASHER
9. SEAT
10. SCREW
11. WASHER
12. WASHER
13. SPACER
14. SEAT

Figure 2-3.33 1 Longitudinal Cantilever Passengers Seat – Typical Installation **(Sheet 1 of 2)**

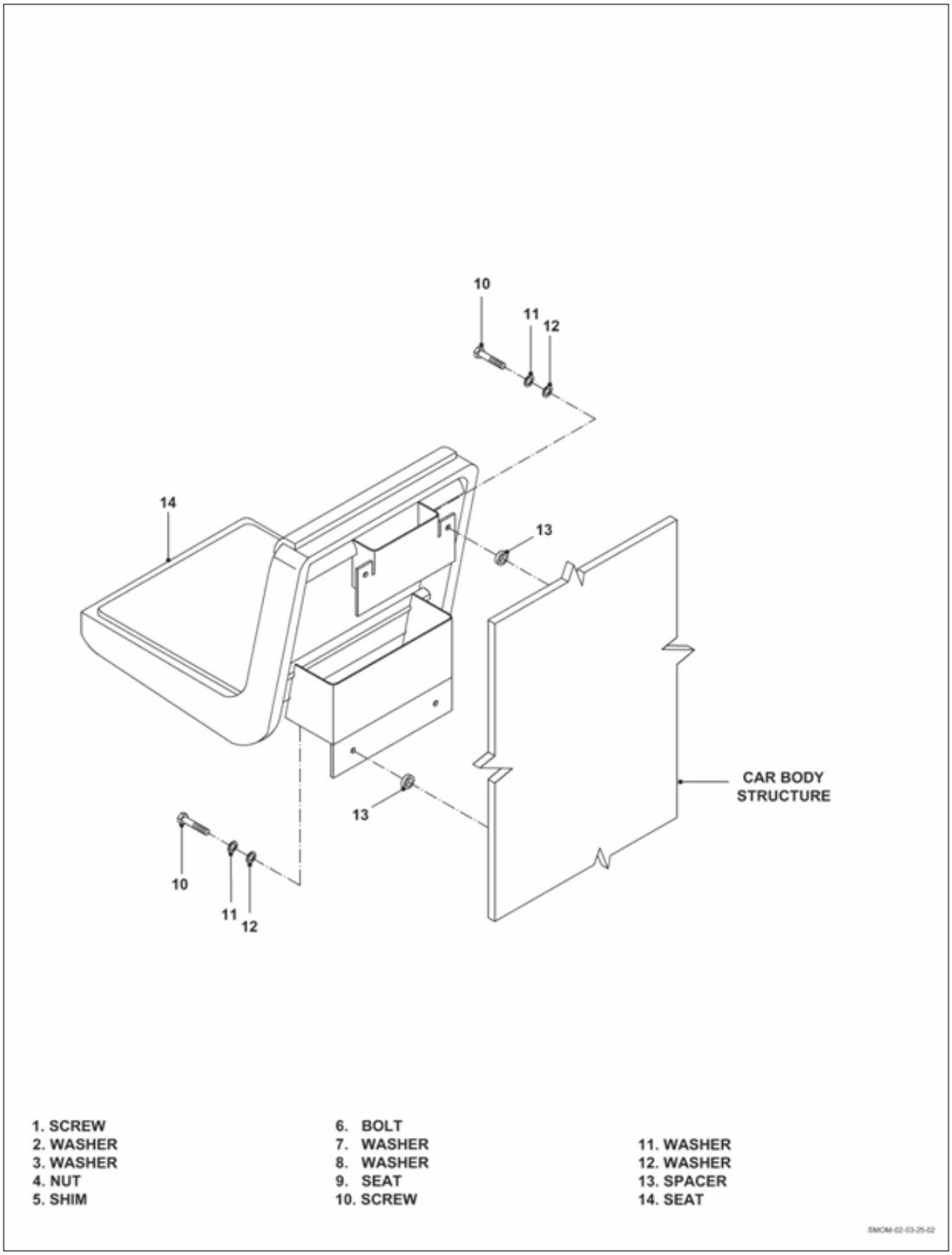


Figure 2-3.33 1 Longitudinal Cantilever Passengers Seat – Typical Installation (Sheet 2 of 2)

e) 3 Cantilever Passengers Seat Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install 3 Cantilever Passengers Seat, proceed as follows, (Refer to Figure 2-3.34):

WARNING:	**3 CANTILEVER PASSENGER SEAT WEIGHS 65 LB (29.4 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. If required, install supports (6, 8) by installing bolts (7) and washers (2, 3).
  2. Position the seat assembly (5) in proper position.
  3. Install bolts (1), washers (2, 3) and nuts (4).
  4. Tighten Nuts (4) to **59 lb-ft (80 Nm)**.
  5. Install Heater Protection (Refer to para 2-3.9.h e))

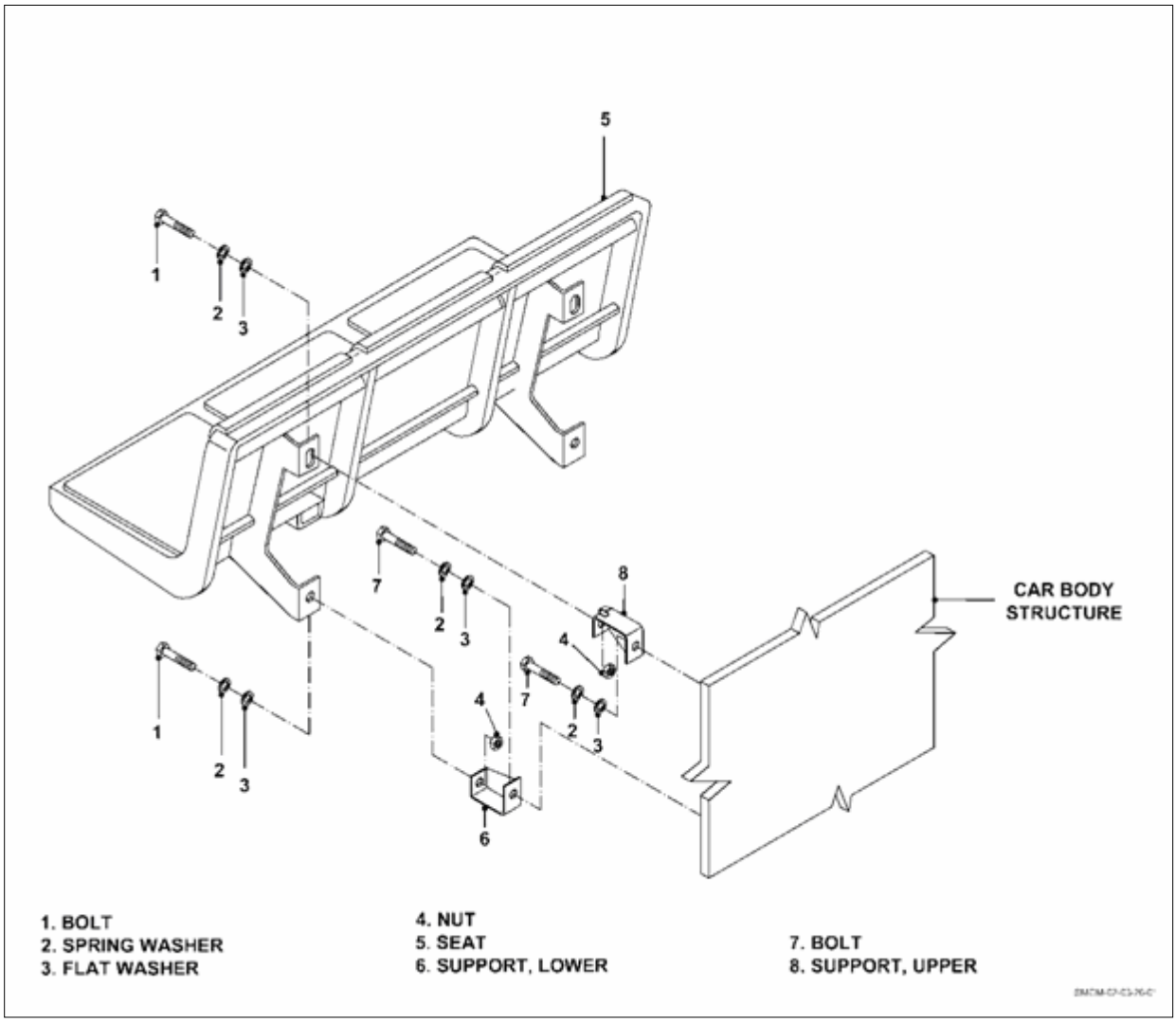


Figure 2-3.34 3 Cantilever Passengers Seat – Typical Installation

f) Passenger Pad Seat - Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Passenger Pad Seat, proceed as follows, (Refer to Figure 2-3.35):

1. Position the box pads (4 or 5).
2. Install screws (1) and washers (2, 3).
3. Tighten screws (3) to **14 lb-ft (19 Nm)**.

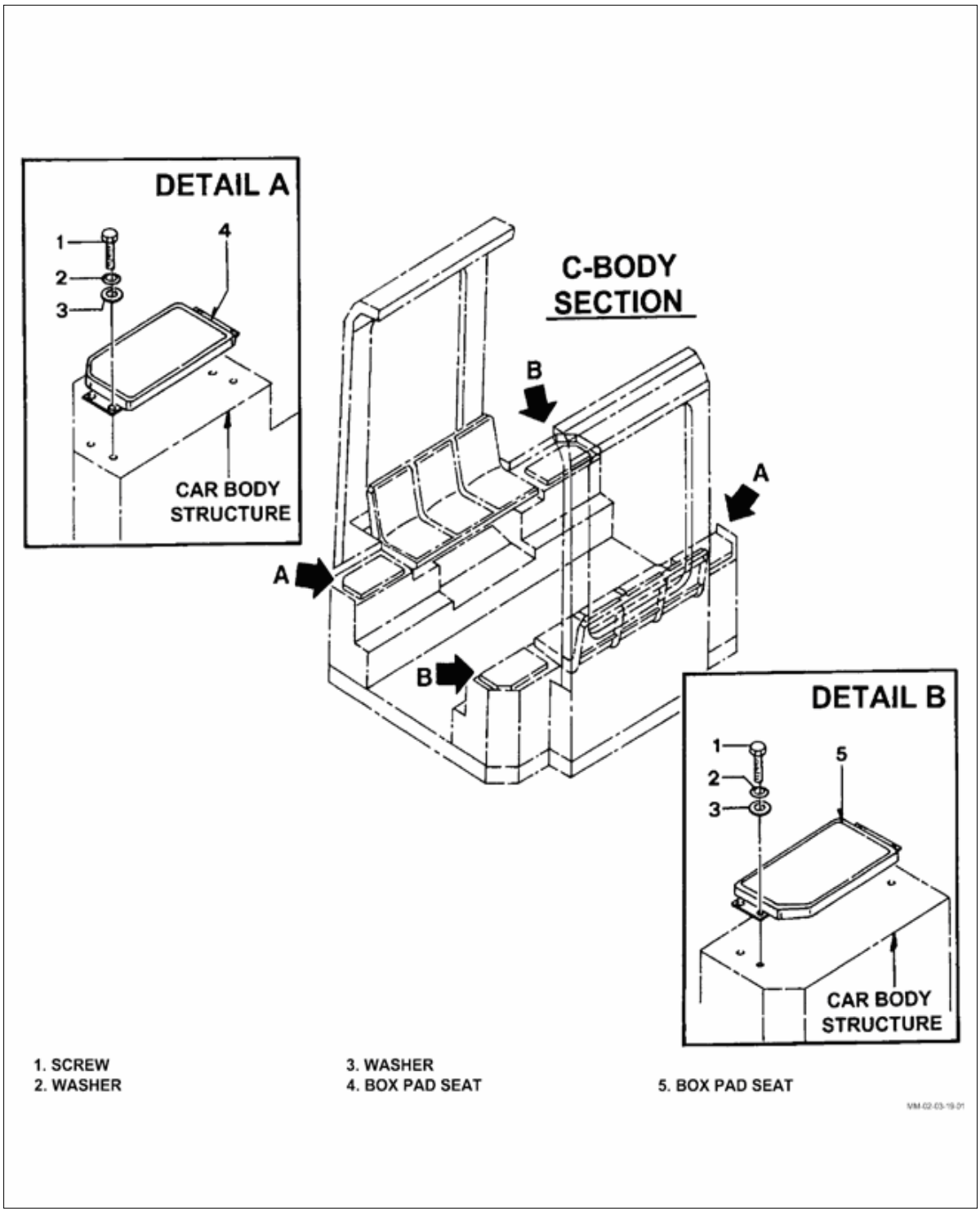


Figure 2-3.35 Passenger Pad Seat – Typical Installation

g) Seat Cushion and Seat Back Insert (Set) - Typical Installation

Each Passengers Seat is provided with (1 through 5) Set of vinyl Seat Cushion and Seat Back Insert, each one equipped with Plug In Extensions to be fitted in the relevant slot of the Seat Frame, (Refer to Figure 2-3.36).

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Set, proceed as follows, (Refer to Figure 2-3.36):

  NOTE: The Plug In Extensions of both Seat Cushion and Seat Back Insert are designed in order to make not possible the Seat Cushion installation without install first the Seat Back Insert.

  The Seat Back Insert is equipped with two Plug In Extensions (4) to be fitted in the Slot (8) of the Seat Frame, as shown in Figure 2-3.36.

  The Seat Cushion is equipped with two Plug In Extensions (6) to be fitted in the Slot (8) of the Seat Frame, along with the Seat Back Insert, as shown in Figure 2-3.36.

  1. Install the Seat Back Insert first by placing its Top Tabs on the top of the Seat Frame. Secure it by hand pressing on the Top Tabs.
  2. Install the Seat Cushion by placing the two Plug In Extensions (6) in the Slot (8) of the Seat Frame, along with the Seat Back Insert, as shown in Figure 2-3.36. Secure it by hand pressing on the Seat Tabs (7)
  3. Install rivet (1) in order to make unmovable the Set.

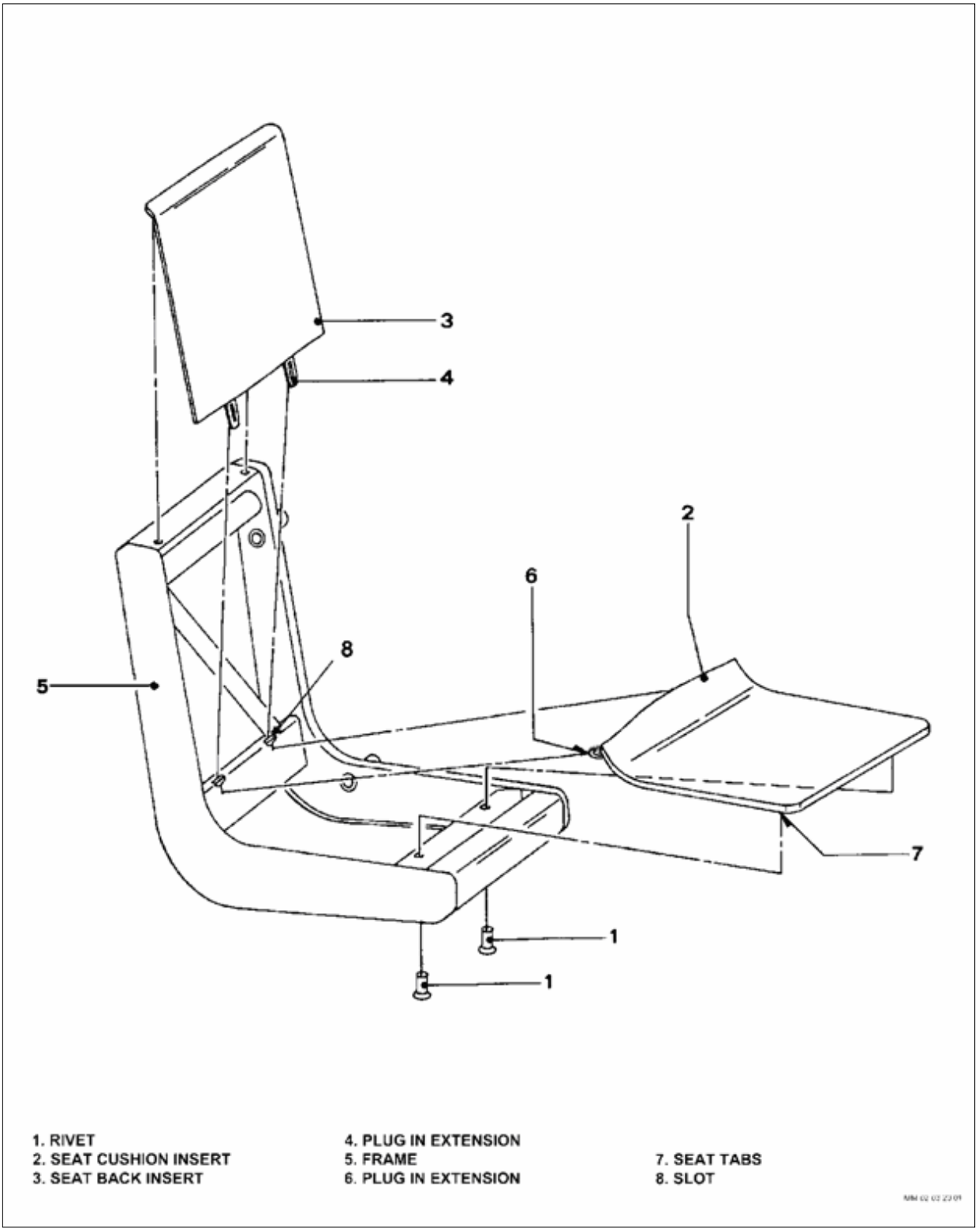


Figure 2-3.36 Seat Cushion and Seat Back Insert (Set) – Typical Installation

h) Seat Fairing Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Seat Fairing, proceed as follows (Refer to Figure 2-3.37):
  1. Position seat fairing (1 or 3) in the related seat.
  2. Install and tighten screws (2 or 4).

2-3.4.i Adjustment/Test

the upper stainless steel skin of the plymetal floor panels. The vehicle is equipped with a rubber floor to provide a comfortable and safe walk deck for passenger, as well as to cover the structures.

The floor (Refer to Figure 2-3.38) consists of slip-resistant rubber sheets glued (by BOSTON HYDROBOND A/401 TYPE) to plymetal panels.

Suitable stainless steel floor pans, which provide acoustic and thermal insulation are placed between plymetal panels and underframe structure.

The rubber sheets are 0.2 in. thick ribbed type (on vehicle aisle, articulation, doorways and steps) and 0.12 in. thick smooth type (under the seats and in both Op. Cabs).

The junction between floor (rubber sheets) and side liners is made by sealer (3M 08680 type) and stainless steel moldings.

The plymetal panels (0.64 in thick) consist of stainless steel sheets (0.016 in. thick AISI 304) and structural plywood layers glued together.

The panels are designed to be removed through the door openings and to support dead loads plus passenger load equivalent to AW3 with no permanent deformation over the vehicle's life.

Floor panels are attached to the floor structure using flat head stainless steel fasteners in formed countersunk holes in

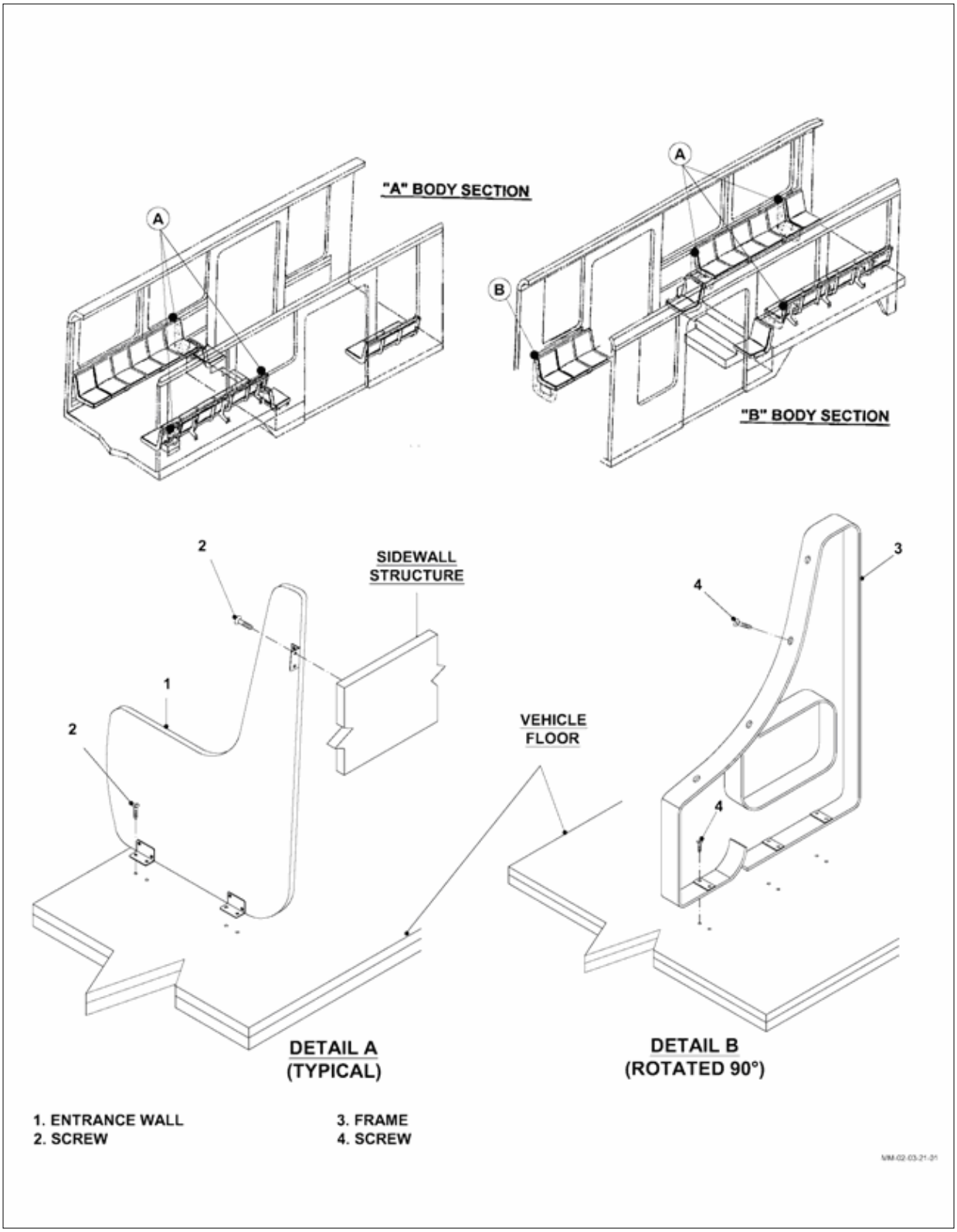


Figure 2-3.37 Seat Fairing – Typical Installation

2-3.5 Floor

2-3.5.a Description and Theory of Operation

the upper stainless steel skin of the plymetal floor panels. The vehicle is equipped with a rubber floor to provide a comfortable and safe walk deck for passenger, as well as to cover the structures.

The floor (Refer to Figure 2-3.38) consists of slip-resistant rubber sheets glued (by BOSTON HYDROBOND A/401 TYPE) to plymetal panels.

Suitable stainless steel floor pans, which provide acoustic and thermal insulation are placed between plymetal panels and underframe structure.

The rubber sheets are 0.2 in. thick ribbed type (on vehicle aisle, articulation, doorways and steps) and 0.12 in. thick smooth type (under the seats and in both Op. Cabs).

The junction between floor (rubber sheets) and side liners is made by sealer (3M 08680 type) and stainless steel moldings.

The plymetal panels (0.64 in thick) consist of stainless steel sheets (0.016 in. thick AISI 304) and structural plywood layers glued together.

The panels are designed to be removed through the door openings and to support dead loads plus passenger load equivalent to AW3 with no permanent deformation over the vehicle's life.

Floor panels are attached to the floor structure using flat head stainless steel fasteners in formed countersunk holes in

The floor pans are designed to provide acoustical and thermal insulation. Reinforcements and steel tapping plates for above floor attachments are provided in the underside of the panels. The floor is attached to the floor beams, body sills, end sills, side sills and body bolster. Transverse beams are provided to transmit vertical floor loads to the side sills. The acoustical insulation is made with sound deadener (0.04 in. thick AQUAPLAS TYPE 163F) sprayed on the insulation pans. The thermal insulation is made by ULTRALITE panels (1.57 in. thick).

Between panels and insulation pans a gasket 0.19 in. thick is installed.

The floor is provided with trapdoors to allow truck maintenance operations.

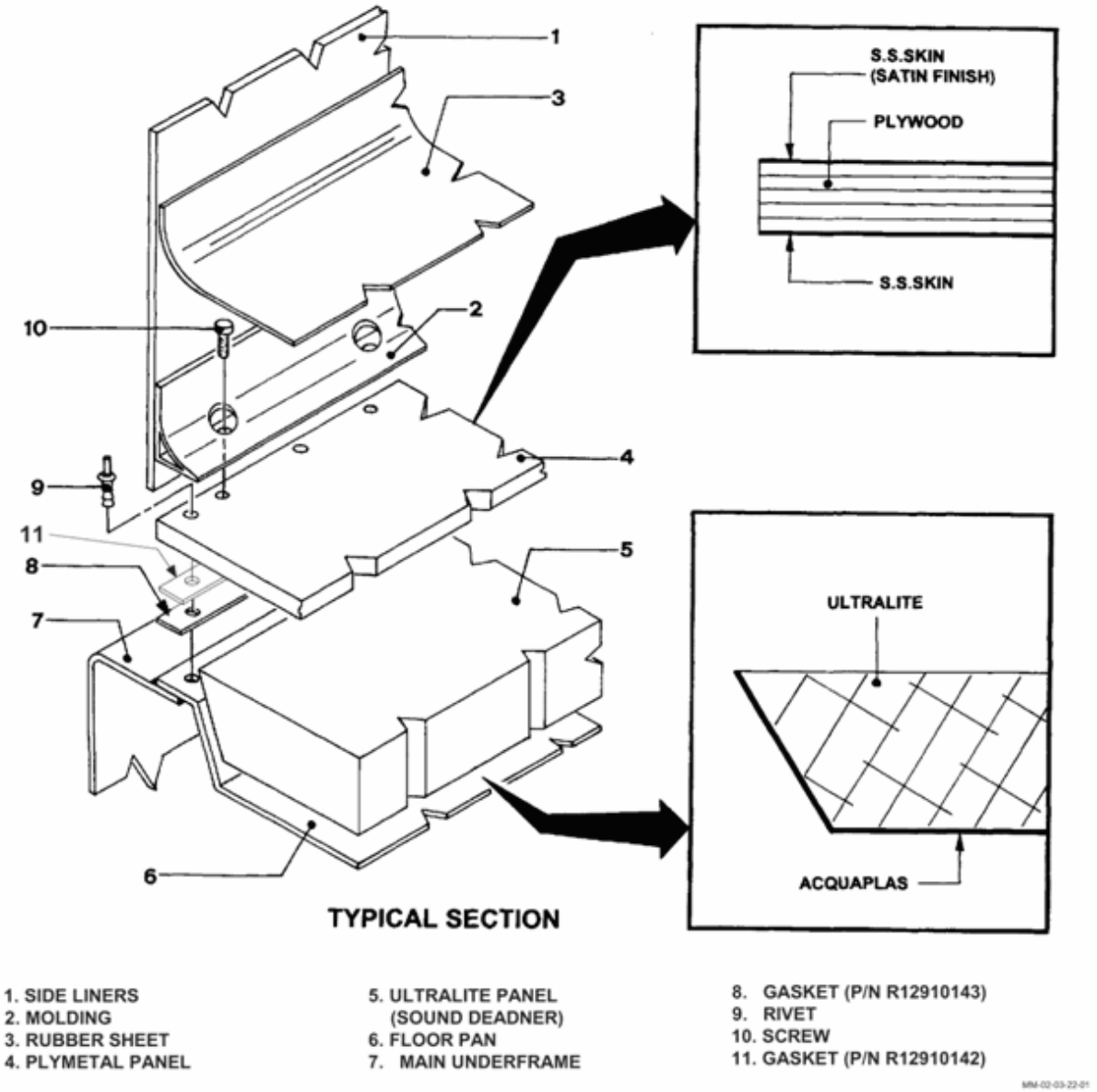


Figure 2-3.38 Floor - Typical Section

2-3.5.b Specific Safety Precautions

CAUTION: DO NOT USE ON RUBBER COMPONENTS THE FOLLOWING PRODUCTS:

METHYLENE CHLORIDE SOLVENTS AND COMMERCIAL PAINT STRIPPER.

CAUTION: DURING FLOOR INSTALLATION, FOLLOWS STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

2-3.5.c Fault Isolation

For Floor Fault Isolation, refer to Table 2-3.11.

Table 2-3.11 Floor - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Rubber sheets damaged.	1. Heavy stress/ vandalism.	1. Repair. Refer to para 2-3.5.g.
2. Covings/moldings not properly fitted.	1. Attaching parts loose/ defective.	1. Fasten/replace.

2-3.5.d Disassembly

The Floor Removal procedures consist in the following main operations:

- Floor - Typical Removal.
- Floor Trap Removal.
- Rubber Step's - Typical Removal.
- Interior Step - Typical Removal.

a) Floor - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor, perform the following typical procedure (Refer to Figure 2-3.39):

  1. Select the floor area to be removed.
  2. Remove handrails and stanchions located in the involved area (Refer to para 2-3.1.d).
  3. Remove the passenger seat located in the involved area (Refer to para 2-3.4.d).
  4. Remove rubber sheet (3) related to selected area, as follow:
     a. Lift by hand a corner of the rubber sheet to be removed.
     b. Strip/scrape little by little the glue layer between the rubber sheet (3) and the plymetal panel (2).
     c. Remove rubber sheet (3).
  5. Remove moldings (4) related to the selected area as follow:
     a. Remove screws (6).
     b. Remove moldings.
  6. Drill rivets (7) using standard tools as for standard workshop practices.
  7. Remove the plymetal panel (2) by lifting it from frame structure.

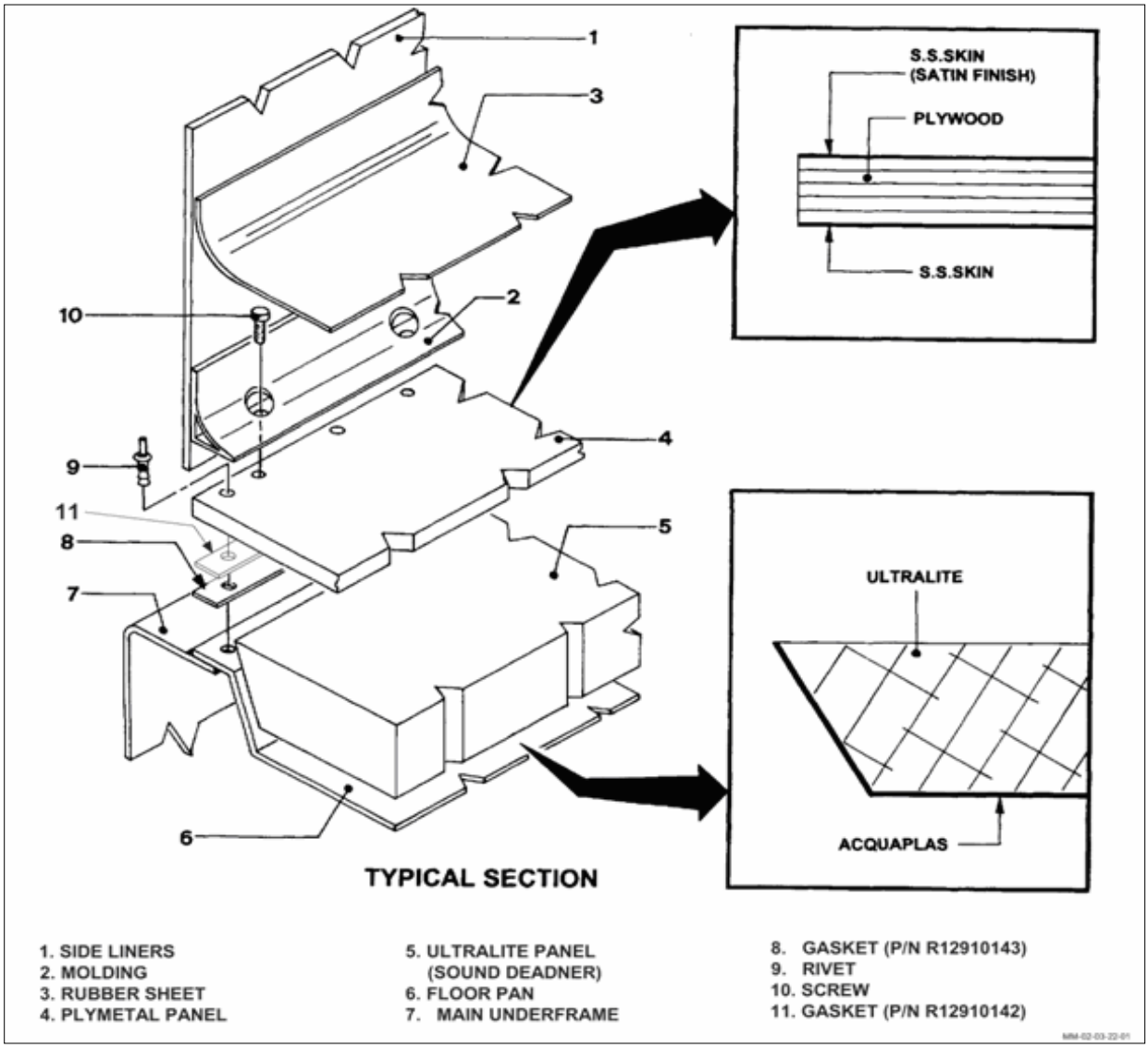


Figure 2-3.39 Floor - Typical Removal

b) Floor Trap Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor Trap, proceed as follows (Refer to Figure 2-3.40):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.

2. Remove screws (2).
3. Remove Trapdoor.

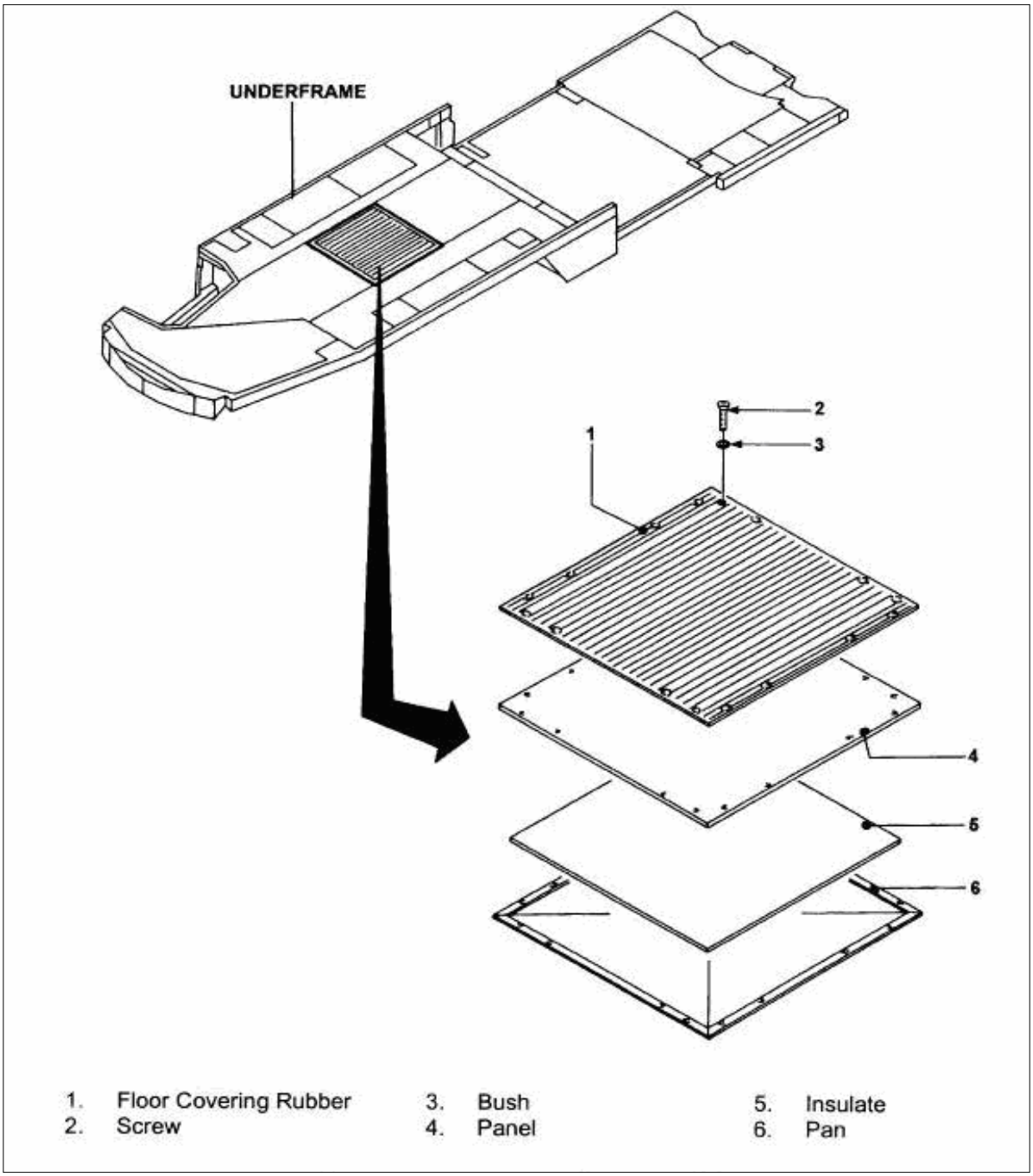


Figure 2-3.40 Floor Trap - Removal

c) Rubber Step's - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Rubber Step's, proceed as follows (Refer to Figure 2-3.41):

  1. Remove the screws (1) and molding (2).
  2. Remove the rubber floor covering (3) and the step yellow sill (4) as follows:
     a. Lift by hand a corner of the rubber sheet (floor covering or yellow sill step) to be removed.
     b. Strip/scrape little by little the glue layer between the rubber sheet (3) and the step structure.
     c. Remove rubber sheet (floor covering or yellow sill step).

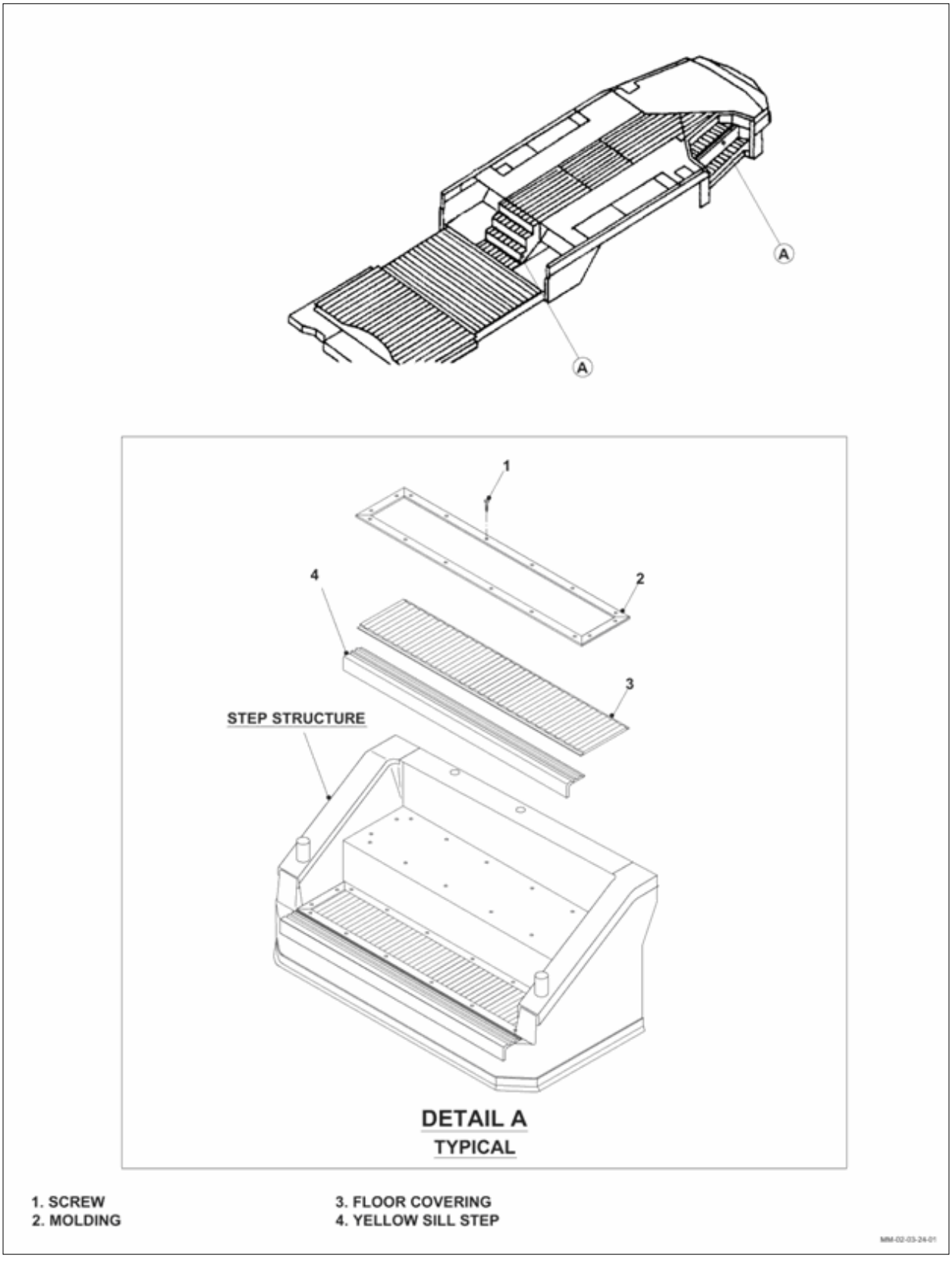


Figure 2-3.41 Rubber Step's – Typical Removal

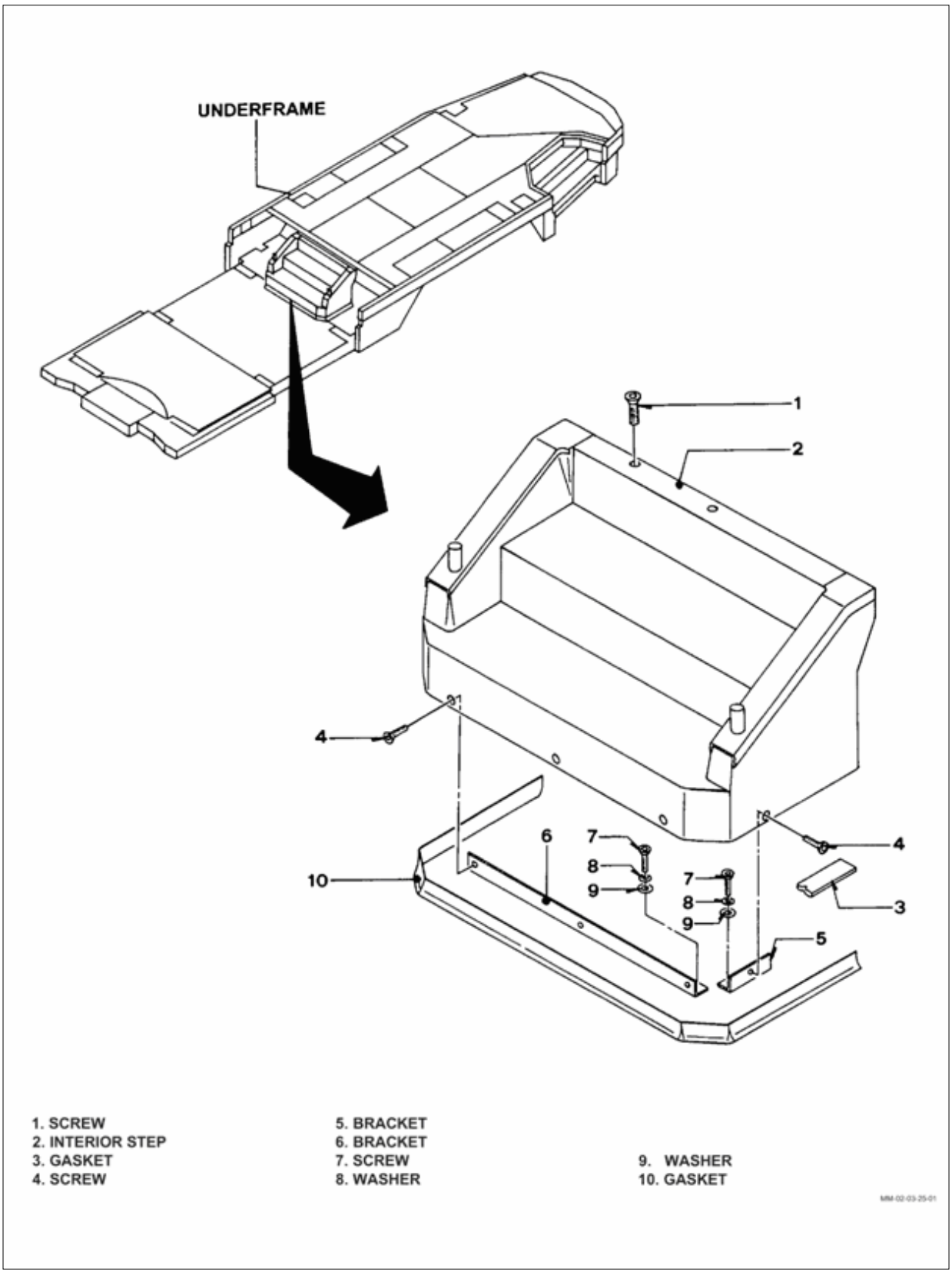
d) Interior Step - Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

WARNING:	**INTERIOR STEP WEIGHS 125 LB (57 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO OPERATES WITH CARE TO PREVENT UNSAFE CONDITIONS.**

To Remove each Interior Step, proceed as follows (Refer to Figure 2-3.42):

1. Remove the stanchions (Refer to para 2-3.1.d).
2. Remove Yellow Sill Step that covers screws (1). (Refer to para 2-3.5.d c)).
3. Remove the gasket (10).
4. Remove the screws (1, 4).
5. Remove the interior step (2) with gasket (3).
6. If necessary remove the brackets (5, 6), by removing the screws (7) and washers (8, 9).



1. SCREW
2. INTERIOR STEP
3. GASKET
4. SCREW
5. BRACKET
6. BRACKET
7. SCREW
8. WASHER
9. WASHER
10. GASKET

Figure 2-3.42 Interior Step – Typical Removal

2-3.5.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Vehicle Floor, proceed as follows:
  1. Clean the floor using MBTA cleaning tools/equipment.
  2. Wash the floor using mild detergent diluted in water and dry it.

b) Painting (Not Applicable)

2-3.5.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Floor, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect rubber floor and moldings for cracks and correct installation.
  3. Inspect floor traps for cracks, burns and correct installation.
  4. Inspect rubber floor for free of indentations, particularly on steps and door opening areas.
  5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.5.g Repair

a) Rubber Sheet

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Glue, BOSTON HYDROBOND A/401 TYPE.
- **Procedure.**

  To repair rubber sheet on local/limited areas, operate as follows:
  1. Clean the involved area.
  2. Mark the repair area.
  3. Cut the rubber sheet, following accurately the marking lines.
  4. Putting under stress an edge of the rubber sheet to be removed, strip/scrape, the glue layer between the rubber sheets and the plymetal panel.
  5. Remove the rubber sheet.
  6. Clean and degrease the plymetal surface with acetone.
  7. Prepare and clean the part of the rubber sheet to be installed (side to glue).
  8. Apply glue (BOSTON HYDROBOND A/401 TYPE) on the plymetal surface only.
  9. Install the new rubber sheet.
  10. Check/adjust the rubber sheet installation.

b) Inner Ramp

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Repair Inner Ramp, operate as follows:
  1. Minor scratches and cracks:
     a. The damaged surface must be cleaned and roughened.

b. Prepare cracks by drilling a small hole at each end of the crack and scrape the crack into a shallow 'V' shape.

c. Prepare polyester body putty with paste catalyzer: mix 100 parts putty with 10 parts catalyzer and generously fill the damaged part.

NOTE: Resin and catalyzer should not be mixed until required because mixture has a limited pot life (50 min approximately). Warming mixture reduces viscosity and aids handling, but shortens pot life of mixtures. In all cases, refer to resin manufacturer's instructions on use of resin.

d. After polymerization has occurred, wet sand (with 400 grain sand paper) the surface until smooth and flush with the fiberglass in preparation for the application of two coats, each 60 microns thick, of Gel-Coat.
e. No sanding is required between coats.

2. Burns:
   a. Remove all the Gel-Coat from the damaged surface down to the fiberglass (Mat), then proceed as described for minor scratches and cracks.
3. Breaks:
   a. Remove the damaged layer, creating a regular-shaped opening in the surrounding area, with defined edges.
   b. Cut into the internal insulation, as much as necessary.
   c. Using a grinding-wheel, taper the edges of the opening to a width of about 1 in.; sand the surrounding area about 2 in.
   d. Prepare polyester body putty with paste catalyzer: mix 100 parts putty with 23 parts catalyzer and generously fill the damaged part.

NOTE: Resin and catalyzer should not be mixed until required because mixture has limited pot life (50 min approximately). Warming mixture reduces viscosity and aids handling, but shortens pot life of mixtures. In all cases, refer to resin manufacturer's instructions on use of resin.

   e. Fill the cavity with phenolic foam honeycomb layered with fiberglass impregnated with catalyzed resin.
   f. Sand (with abrasive paper) the edges of the opening and clean with acetone.
   g. Apply layers of impregnated cloth over repaired area, pressing the cloth thoroughly with brush knife in order to obtain complete adhesion and removal of any air bubbles.
   h. Let dry until completely hard (polymerization).

i. After polymerization has occurred, wet sand (with 400 grain sand paper) the surface until smooth and flush with fiberglass to prepare for the application of two coats, each 60 microns thick, of Gel-Coat.
j. No sanding is required between coats.

2-3.5.h Reassembly

The Floor Installation procedures consist in the following main operations:

– Floor - Typical Installation.
– Floor Trap Installation.
– Rubber Step's - Typical Installation.
– Interior Step - Typical Installation.

a) Floor - Typical Installation

- **Reference Information.**

1. Tools /Equipment.
   - Overhaul Standard Tools Kit.
2. Material.
   - Glue (type BOSTON HYDROBOND A/401 with HENKEL Activator type HB at 3 ÷ 4 %).
   - Gasket (type XJ 456 I), P/N R12910143, Q.ty as required.
   - Gasket, P/N R12910142, Q.ty as required (for Playmeta Panel Level).
   - MBTA approved degreaser / solvent. (Refer to Section 1 Table 1-9).
   - Double Sided Adhesive Tape (3M950 TRASFER type).
   - Loctite (242 type).

- **Procedure.**

To Install Floor, perform the following typical procedure (Refer to Figure 2-3.43):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Vacuum clean first and then degrease the vehicle structure and related attaching part areas using degreaser/solvent (Refer to Section 1, Table 1-9).
3. Clean involved area using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air.
4. Position gasket (type XJ 456 I) along vehicle structure frame (1).
5. Position the plymetal panel (2) located in the involved area.
6. Install rivets (7).

7. Prepare the plymetal surface for Rubber Sheet installation by filling every void, fastener head and cracks between panels with a leveling compound (fire retardant – two parts epoxy).
8. Once the surface preparation is completed inspect it in accordance with the following criteria:
   The surface must be smooth and true within 1/16 inch in 3 feet in any direction.
9. If necessary, install gasket (11) to obtain playmetal panel levelling.
10. Clean and degrease using degreaser / solvent the plymetal panel surface(s).
11. Install molding (4) related to selected area as follows:

    CAUTION: FOLLOWS STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

    a. Apply glue (BOSTON HYDROBOND A/401 type) only on the plymetal panel surface involved.
    b. Install rubber sheet.
    c. Check / adjust the installation of rubber sheets. Remove contingent air bubbles or wrinkles using a clean spatula or piece of wood free of indentations.

       CAUTION: AVOID TO REMOVE BUBBLES BY PIERCING THE RUBBER SHEETS.

12. Install the passenger seats (Refer to para 2-3.4.h).
13. Install the handrails and stanchions (Refer to para 2-3.1.h).

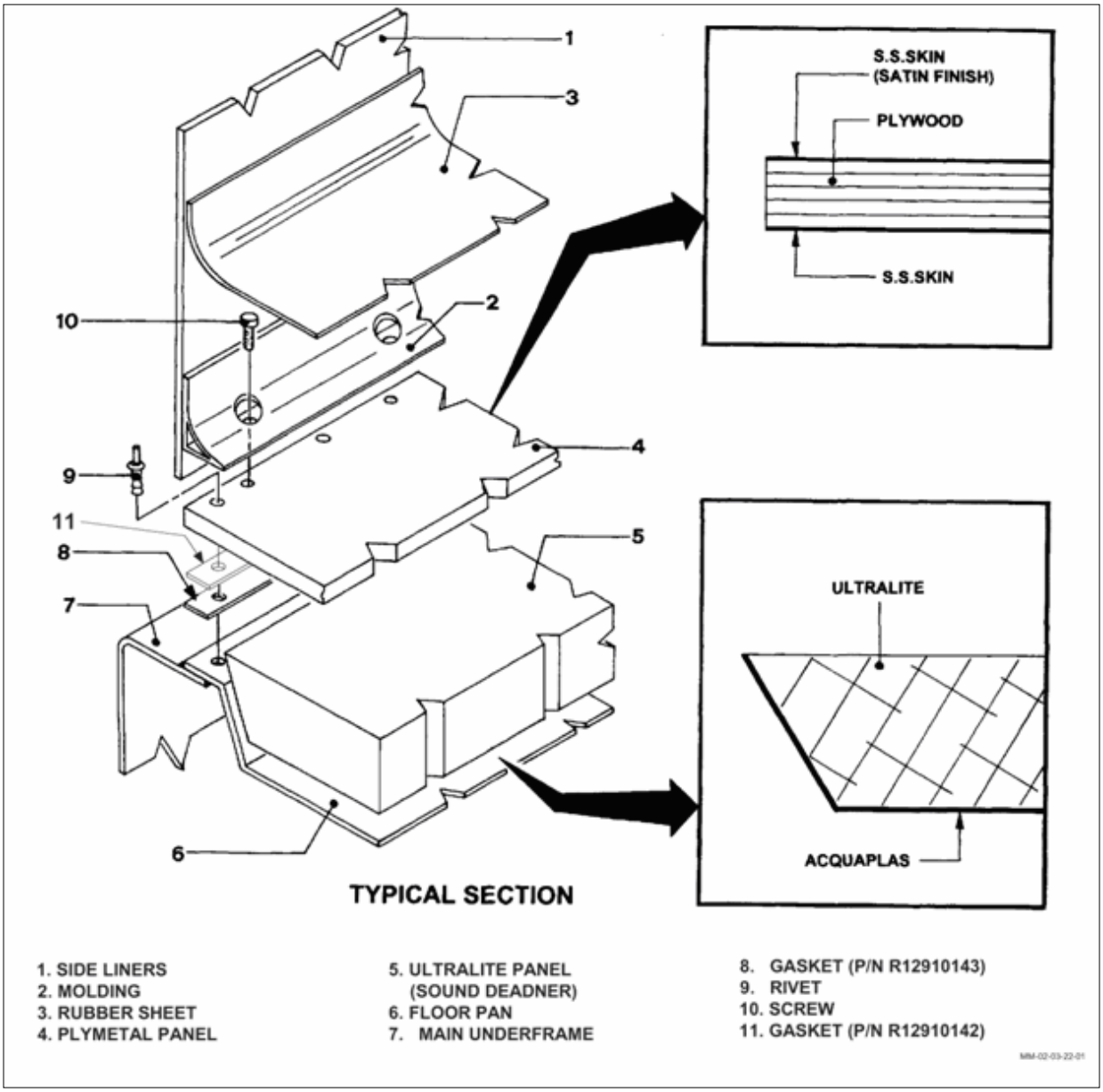


Figure 2-3.43 Floor - Typical Installation

b) Floor Trap Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material.
   - Glue (type BOSTON HYDROBOND A/401 with HENKEL Activator type HB at 3 ÷ 4 %).
   - Loctite (242 type).

- **Procedure.**

To Install Floor Trap, proceed as follows (Refer to Figure 2-3.44):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

   NOTE: In order to prevent/reduce noise level in the vehicle, perform the following procedure with extreme care.

2. Check gasket (3) condition before Floor Trap Installation, if necessary replace as follows:
   a. Remove old gasket (3).
   b. Vacuum clean first and then degrease the floor well in contact with the gasket.
   c. Clean involved area using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air.

      CAUTION: FOLLOWS STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

   d. Apply Glue (type BOSTON HYDROBOND A/401 with HENKEL Activator type HB at 3 ÷ 4 %) on the new gasket (3).
   e. Install gasket (3).
3. Position floor trap (2) as shown.
4. Apply Loctite (242 type) on the screws (1).
5. Install and tighten screws (1).
6. Verify that there are no level differences between the vehicle floor and the floor trap.

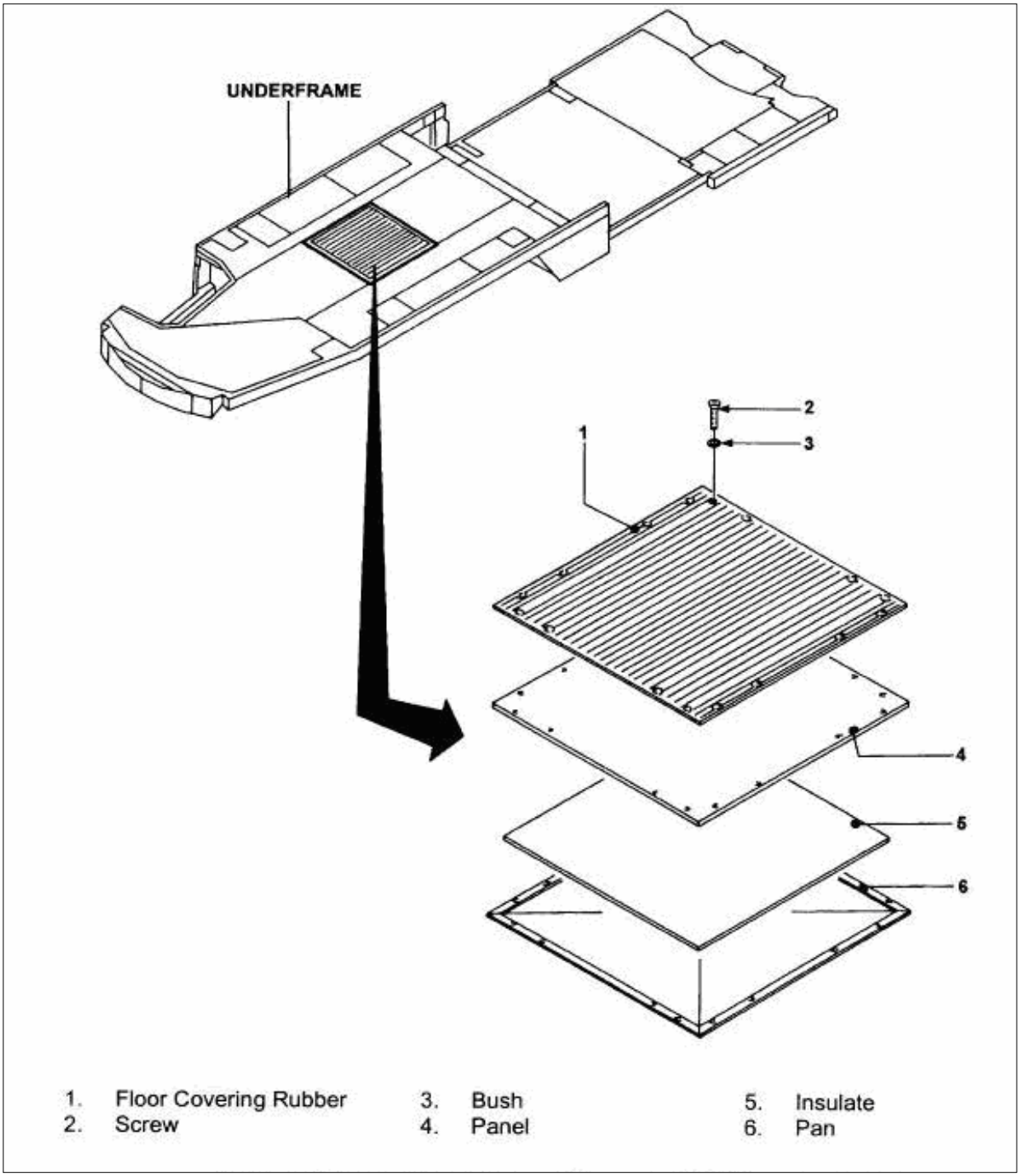


Figure 2-3.44 Floor Trap - Installation

c) Rubber Step's - Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Glue (type BOSTON HYDROBOND A/401 with HENKEL Activator type HB at 3 ÷ 4 %).

- **Procedure.**

  To Install each Rubber Step's, proceed as follows (Refer to Figure 2-3.45):

  1. Prepare the plymetal surface for Rubber Sheet installation by filling every void, fastener head and cracks between panels with a leveling compound (fire retardant – two parts epoxy)
  2. Once the surface preparation is completed inspect it in accordance with the following criteria.
     The surface must be smooth and true within 1/16 inch in 3 feet in any direction.
  3. Clean step surface(s).

     CAUTION: FOLLOWS STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

  4. Apply glue (type BOSTON HYDROBOND A/401) on the step surface(s).
  5. Position the yellow sill step (4) and the rubber floor covering (3).
  6. Position the molding (2).
  7. Install and tighten the screws (1).

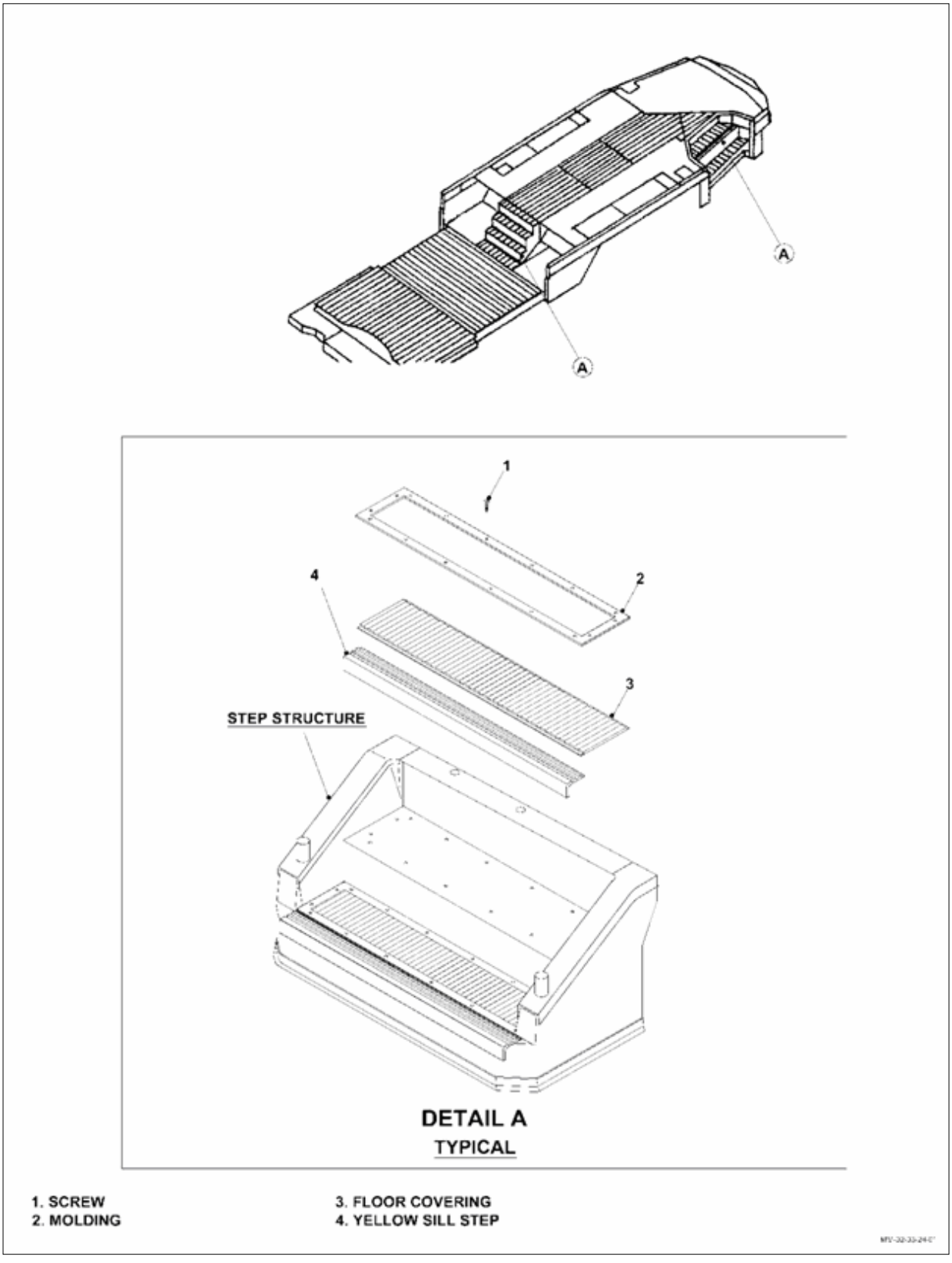


Figure 2-3.45 Rubber Step's – Typical Installation

d) Interior Step - Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Interior Step, proceed as follows (Refer to Figure 2-3.46):

WARNING:	**INTERIOR STEP WEIGHS 125 LB (57 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO OPERATES WITH CARE TO PREVENT UNSAFE CONDITIONS.**

  1. If necessary install the brackets (5-6), by installing screws (7) and washers (8, 9).
  2. Position the interior step (2) with gasket (3).
  3. Install and tighten the screw (1, 4) to **7 lb-ft (9.5 Nm)**.
  4. Install the gasket (10).
  5. Install Yellow Sill Step that covers screws (1). (Refer to para 2-3.5.h c)).
  6. Install the stanchions (Refer to para 2-3.1.h).

2-3.5.i Adjustment/Test (Not Applicable)

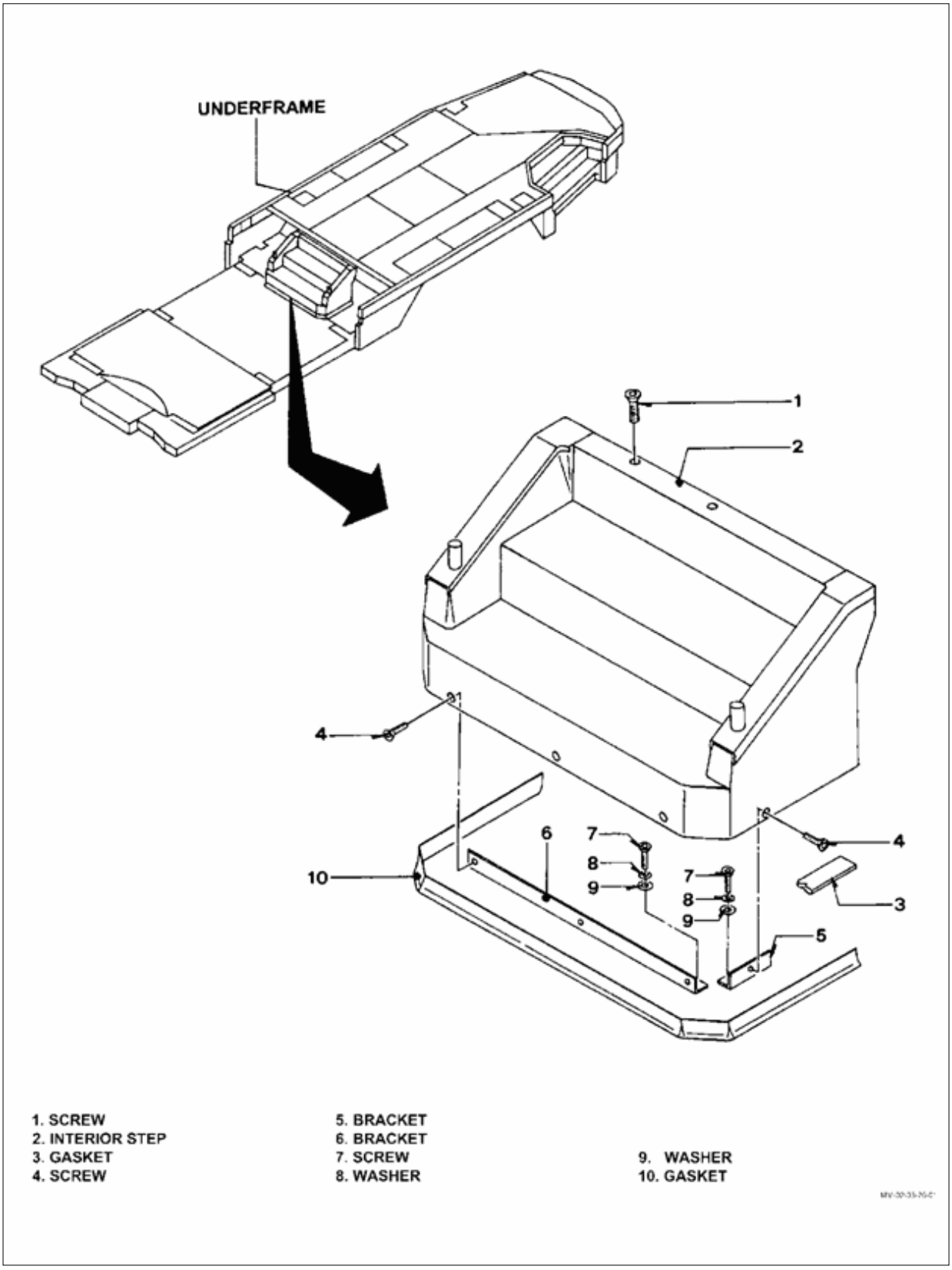


Figure 2-3.46 Interior Step – Typical Installation

2-3.6 Inspection Doors

2-3.6.a Description and Theory of Operation

The vehicle inside is equipped with three inspection doors (Refer to Figure 2-3.47), two installed in the “A” Body Section (RH side) and one installed in the “B” Body Section (RH side). The inspection doors located in the “A” Body Section protect the pantograph pneumatic package components while the inspection doors located in the “B” Body Section protects the electrical system panel. Each door is provided with hinge and two latch assemblies. The Maintenance Key is required to open/close the door.

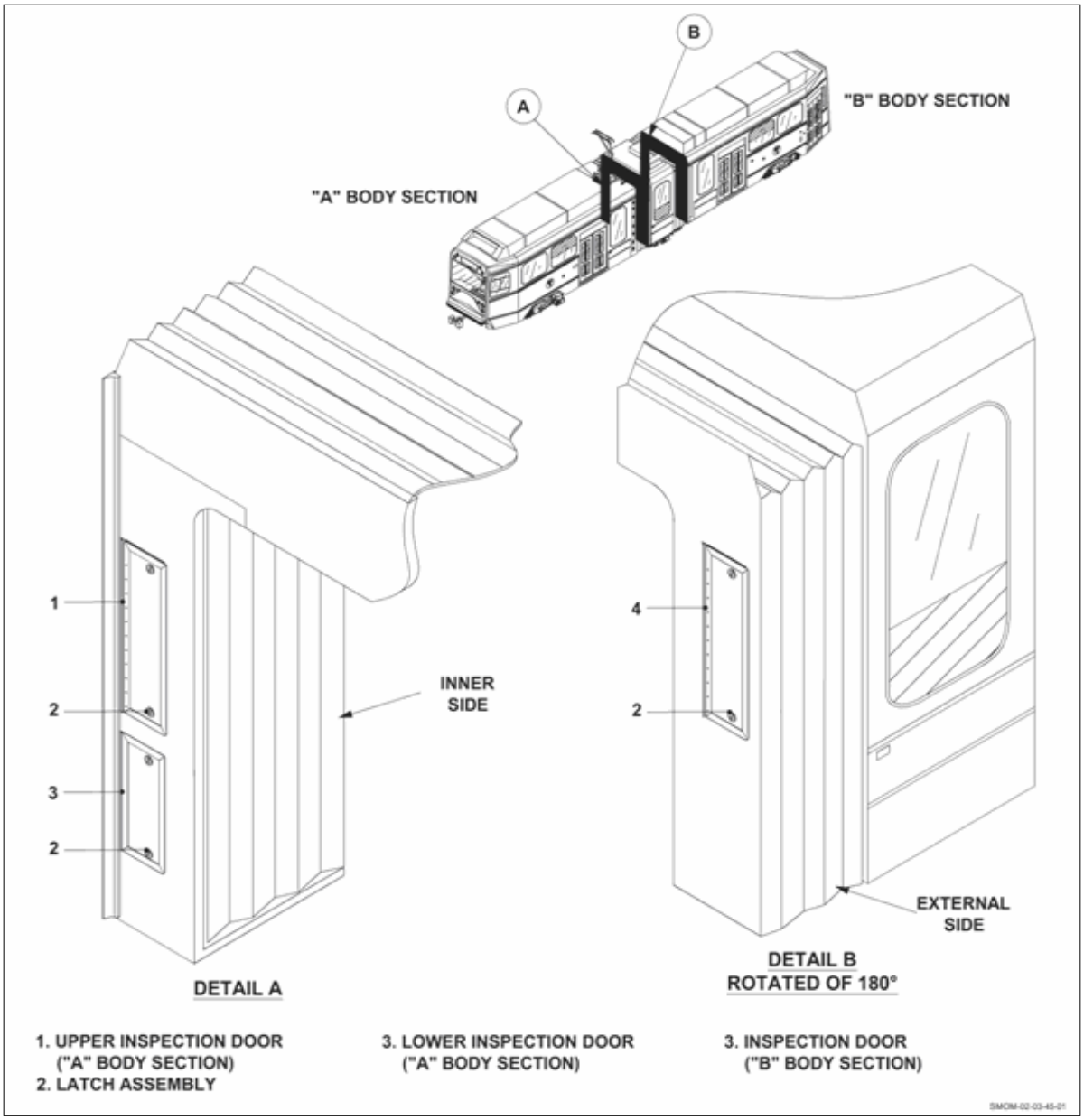


Figure 2-3.47 Inspection Doors - Location

2-3.6.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORM INSPECTION DOORS MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**
> - **REMOVE ELECTRICAL POWER BY LOWERING THE PANTOGRAPH.**
> - **SWITCH OFF THE BATTERY CIRCUIT BREAKER (CB 3Q03 – BATTERY BOX).**
> - **RELEASE PNEUMATIC PRESSURE FROM AIR SUSPENSION SYSTEM.**

2-3.6.c Fault Isolation

For Inspection Doors Fault Isolation, refer to Table 2-3.12.

Table 2-3.12 Inspection Doors - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Inspection Door(s) fails to open.	1. Latch broken/defective.	1. Investigate / Replace / Latch (Refer to para 2-3.6.d).
	2. Hinge broken/defective.	1. Investigate / Replace / Hinge (Refer to para 2-3.6.d).
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten.
2. Panels damaged.	1. Vandalism/Impact.	1. Replace.
4. Hinges / Latch loose or missing.	1. Attaching Parts defective.	1. Replace / Fasten.
	2. Vibration.	1. Investigate / Replace / Fasten.

2-3.6.d Disassembly

a) Inspection Doors (“A” / ”B” Body Section) - Typical Removal/Disassembly

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Inspection Door (“A” / “B” Body Section) proceed as follows (Refer to Figure 2-3.48):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Inspection Door to be removed.
  3. Open Inspection Door (2 or 8) using Maintenance Key.
  4. Support Inspection Doors (2 or 8) and remove screws (10).
  5. Remove Inspection Doors (2 or 8).
  6. To remove hinge (11) proceed as follows (only for inspection panels (8)):
     a. Remove screws (9).
     b. Remove Hinge (11) from the door.
  7. To remove each latch (7) proceed as follows:
     a. Remove screws (3), washer (4) and disconnect lever (5) from latch (7).
     b. Remove special nut (6) and pull out latch (5) from the related seat of panel.

  8 Locate Inspection Door to be removed

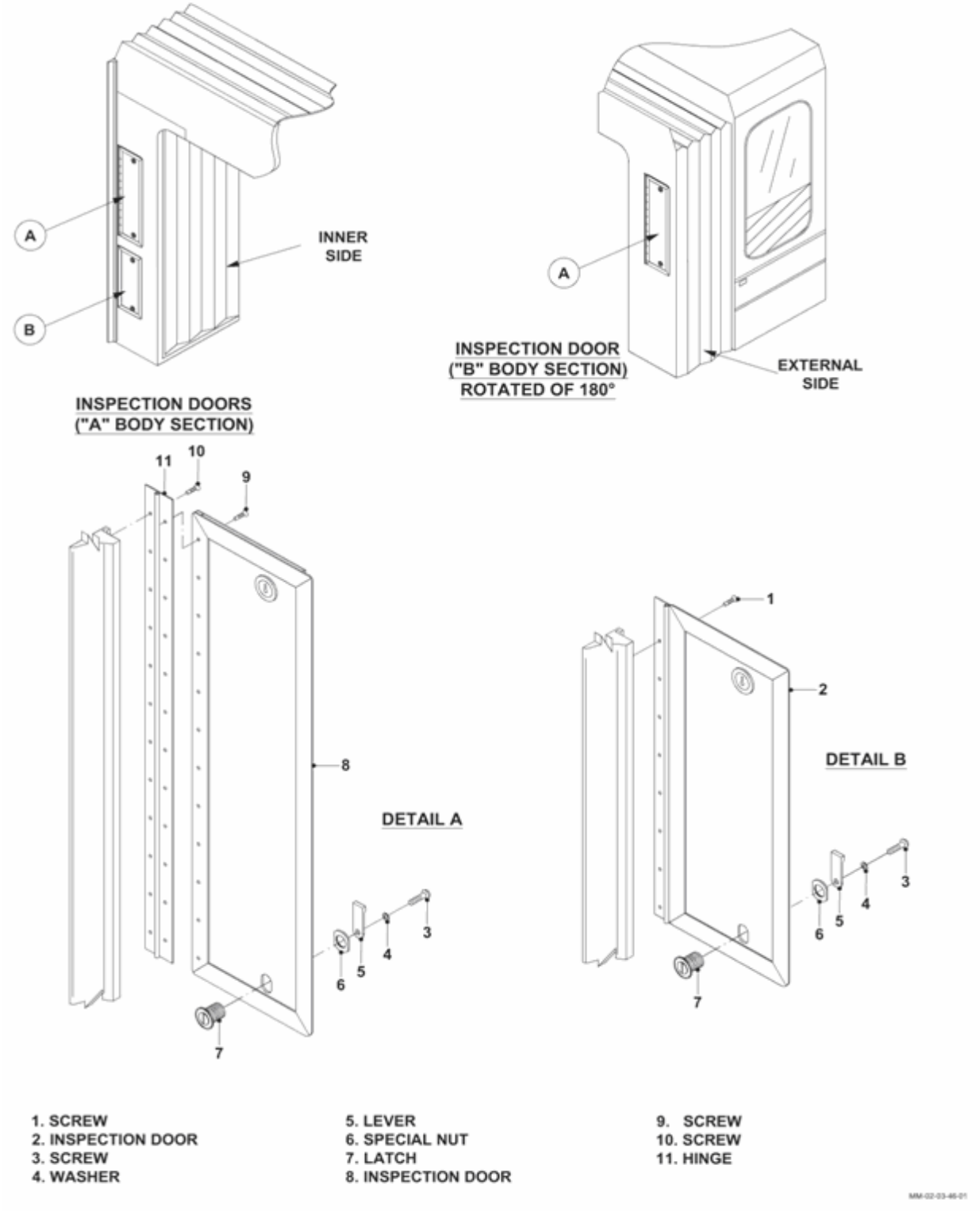


Figure 2-3.48 Inspection Doors (“A” / ”B” Body Car) - Removal

2-3.6.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Inspection Door, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using Maintenance Key open the inspection doors and clean internal / external side using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting

For Inspection Doors Painting, refer to para 2-2.e.

2-3.6.f Inspection

- **Reference Information.**
  1. Tools /Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Inspection Door proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect panels and related hinge for damage/deformation and correct installation.
  4. Inspect latches for damage/deformation.
  5. Using the Maintenance Key verify the correct latch operation.

6. Inspect paint for damage/corrosion.
7. Inspect for corrosion between hinges and body structure.
8. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.6.g Repair

Inspection Doors seriously damaged should be replaced.

2-3.6.h Reassembly

a) Inspection Doors (“A” / ”B” Body Car) - Typical Reassembly/Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Inspection Door (“A” / “B” Body Section) proceed as follows (Refer to Figure 2-3.49):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. To install hinge (11) proceed as follows (only for inspection panels (8)):
     a. Connect Hinge (11) to the door.
     b. Install and tighten screws (9).
  3. To install each latch (7) proceed as follows:
     a. Insert latch (5) in the related seat and lock it by installing special nut (6).
     b. Position lever (5).
     c. Install screws (3) and washer (4).
     d. Tighten screws (3) as required.
  4. Position Inspection Doors (2 or 8).
  5. Install and tighten screws (10).
  6. Close Inspection Door (2 or 8) and lock it using Maintenance Key.

2-3.6.i Adjustment/Test (Not Applicable)

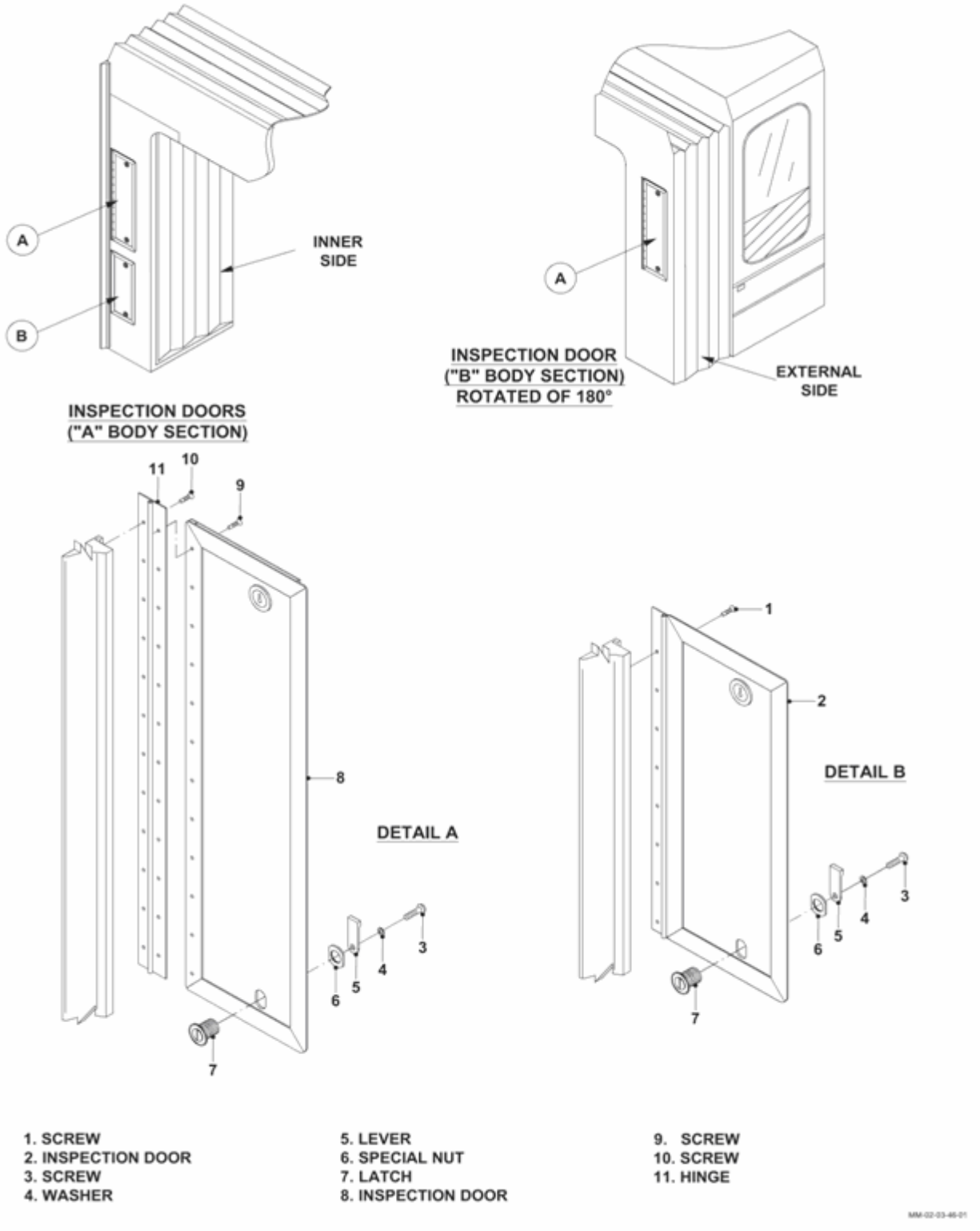


Figure 2-3.49 Inspection Doors (“A” / ”B” Body Car) - Installation

2-3.7 Air Duct Assemblies

2-3.7.a Description and Theory of Operation

The vehicle is equipped with four air duct assemblies (Refer to Figure 2-3.50), two for each “A” / “B” Body Section, to hide the structures, and to provide comfort to the passengers. The air ducts are installed under the roof structure and are used as air conduit. The air duct structure is made of Aluminum (6061 T6 type). Valances are connected to the air duct structure, by means of C-shape profile, and are bolted to the car body roof structure. Valances allow the access to the electrical connections and speakers for maintenance procedures.

NOTE: For Ceiling Light Description, Operation and Maintenance procedures, refer to Section 6 of this manual.

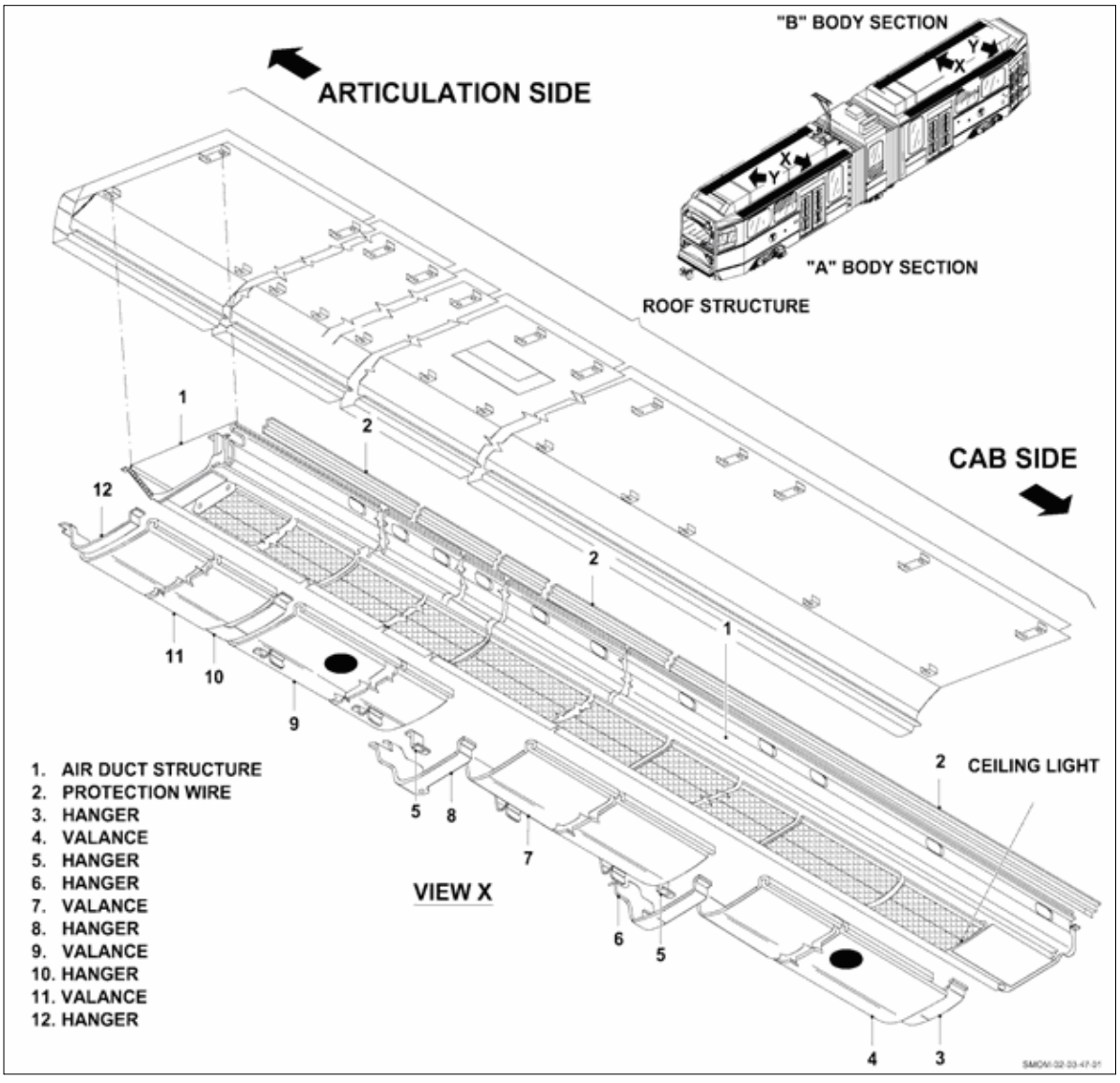


Figure 2-3.50 Air Ducts - Location (Sheet 1 of 2)

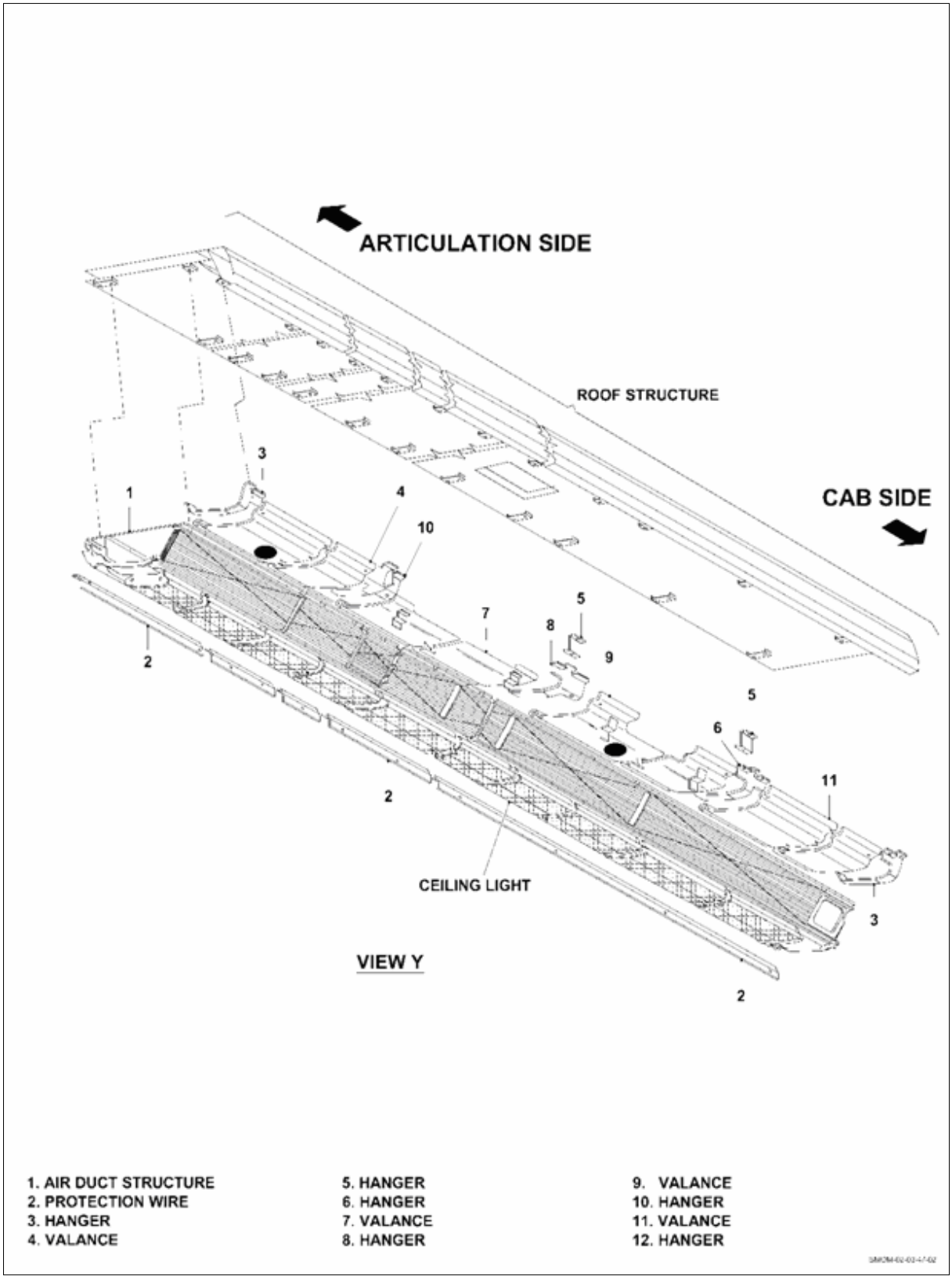


Figure 2-3.50 Air Ducts - Location (Sheet 2 of 2)

2-3.7.b Specific Safety Precautions

WARNING: **BEFORE PERFORM AIR DUCT MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**
- **REMOVE ELECTRICAL POWER BY LOWERING THE PANTOGRAPH.**
- **SWITCH OFF THE BATTERY CIRCUIT BREAKER (CB 3Q03 – BATTERY BOX).**

WARNING: **AIR DUCT STRUCTURE WEIGHS 264 LB (120 KG). DURING THE REMOVAL / INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2-3.7.c Fault Isolation

For Air Duct Fault Isolation, refer to Table 2-3.13.

Table 2-3.13 Air Duct - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Metallic noise.	1. Vibrations.	1. Investigate / Replace / Fasten attaching parts.
	2. Valance(s) loose.	1. Investigate / Replace / Fasten attaching parts.
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten attaching parts.
2. Valance(s) damaged.	1. Vandalism/Impact.	1. Replace. Refer to para 2-3.7.d a).

2-3.7.d Disassembly

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Suitable Device (Minimum Capacity 300 Lb (135 Kg))
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Air Duct, perform the following typical procedure (Refer to Figure 2-3.51):

> **WARNING:** **AIR DUCT STRUCTURE WEIGHS 264 LB (120 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Air Duct to be removed.
  3. Support involved Valance (4), remove screws (5) and washers (6).
  4. Remove valance (4) by disconnecting it from air duct structure.
  5. If necessary, remove hanger (12) by removing screw (10), washers (11, 13) and nut (14).
  6. Disconnect electrical connections of the ceiling lights and speakers. Make note of wires code/color and tag all wires removed.
  7. Remove involved Ceiling Light as follows:
     a. Remove screws (19), washers (21, 22) and nuts (23).
     b. Remove ceiling light (18) and hanger (20).
  8. Remove screws (25) and washers (26, 27).
  9. Remove support (24).
  10. Support Air Duct (3) by a suitable device (Minimum Capacity 300 Lb (135 Kg)).
  11. Remove screws (7) and washers (8, 9).
  12. Remove Air Duct (3) and shims (15, 16).

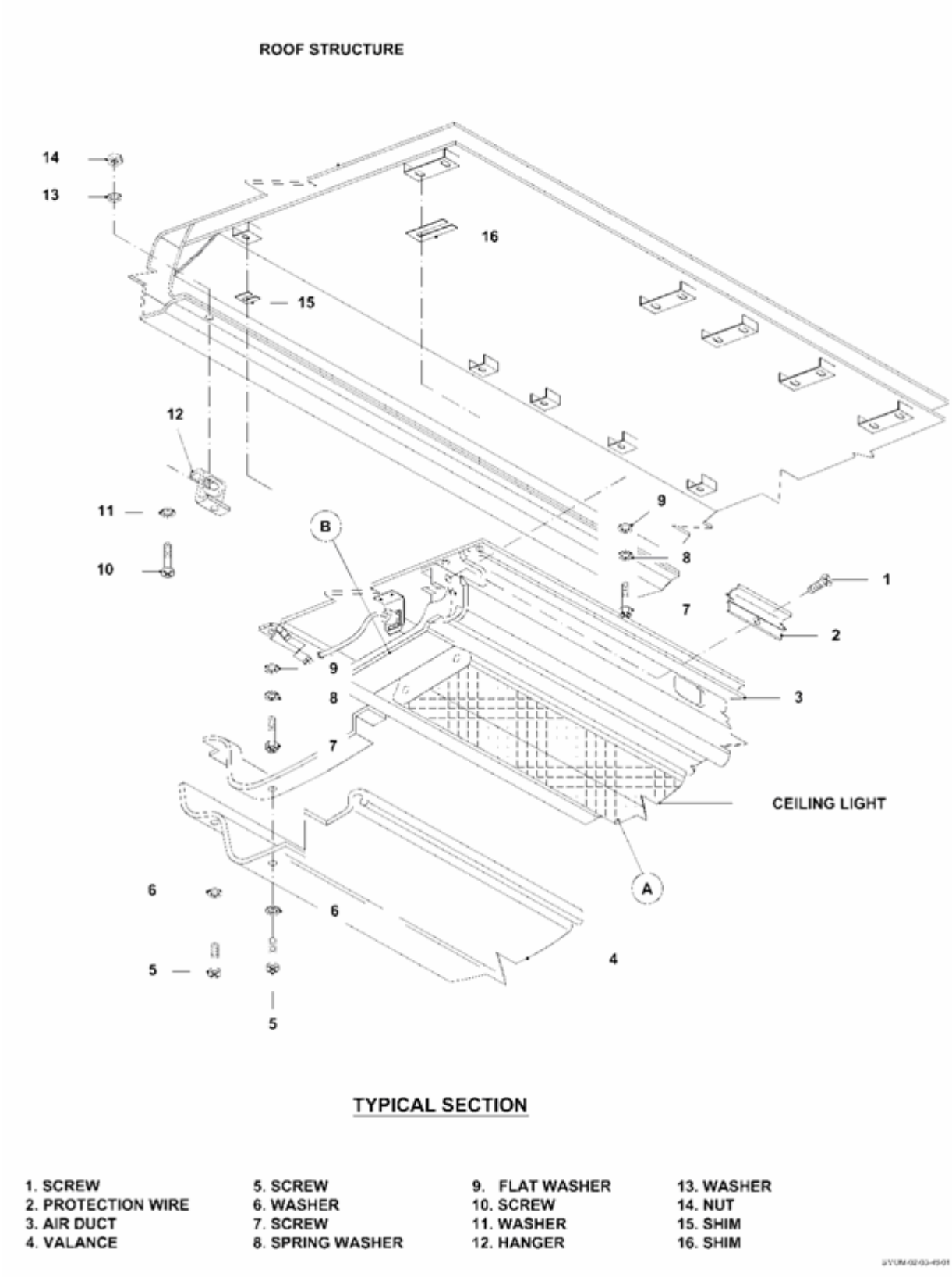


Figure 2-3.51 Air Duct – Typical Removal (Sheet 1 of 2)

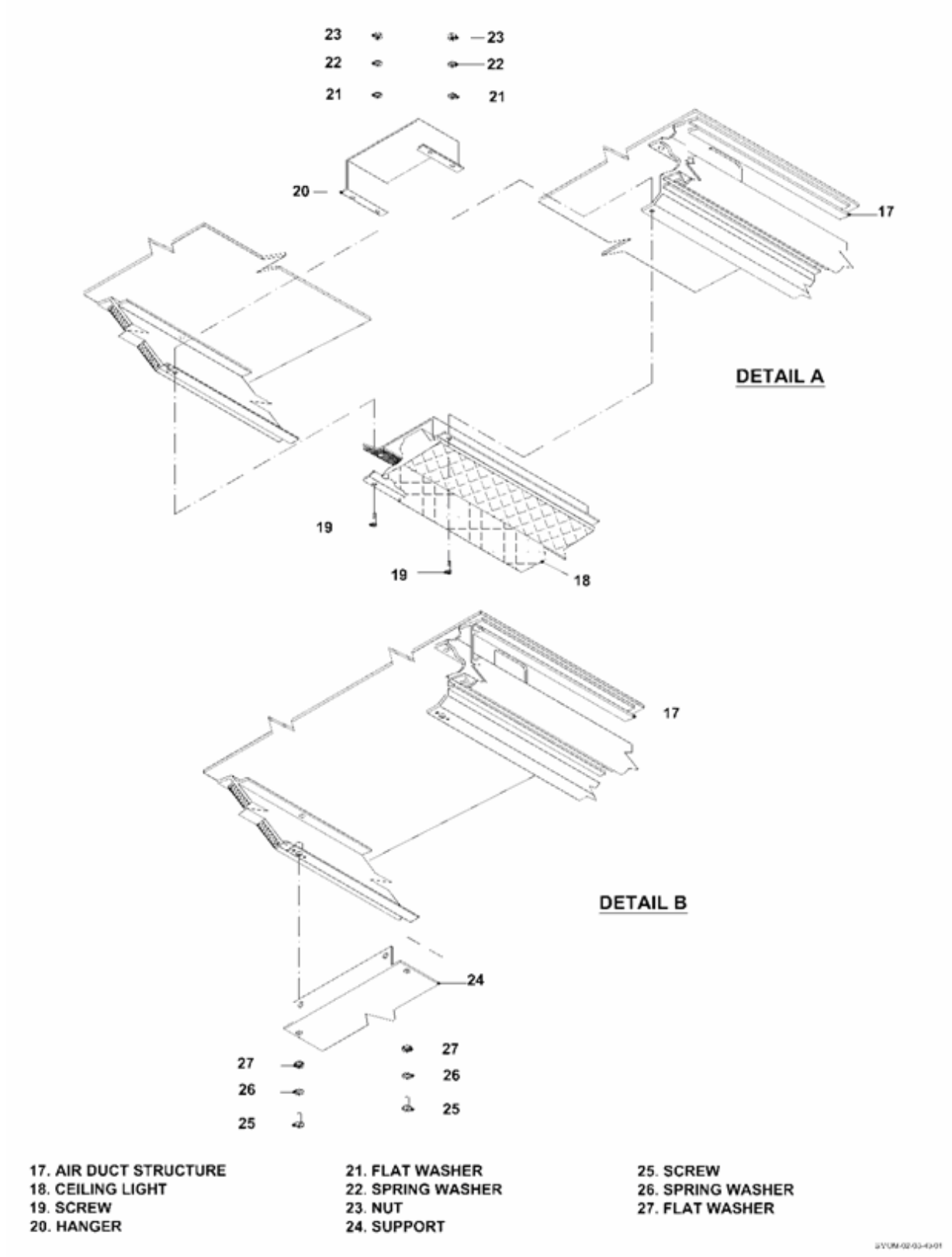


Figure 2-3.51 Air Duct – Typical Removal (Sheet 2 of 2)

2-3.7.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Air Duct, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean air duct internal / external side using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting (Not Applicable)

2-3.7.f Inspection

- **Reference Information.**
  1. Tools /Equipment.
     - Maintenance Key.
     - Suitable Device (Minimum Capacity 300 Lb (135 Kg))
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Air Duct proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect valance for damage/deformation and correct installation.
  3. Inspect air duct structure for damage/deformation and correct installation.
  4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.7.g Repair

Air Duct seriously damaged should be replaced.

2-3.7.h Reassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Air Duct, perform the following typical procedure (Refer to Figure 2-3.52):

> **WARNING:** **AIR DUCT STRUCTURE WEIGHS 264 LB (120 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position Air Duct (3) by a suitable device (Minimum Capacity 300 Lb (135 Kg)) in related seat
  3. Position shims (15, 16).
  4. Install screws (7) and washers (8, 9).
  5. Tighten screws (7) to **16.6 lb-ft (22.5 Nm)**.
  6. Install involved Ceiling Light as follows:
     a. Position ceiling light (18) and hanger (20).
     b. Install screws (19), washers (21, 22) and nuts (23).
     c. Tighten nuts (23).
  7. Position support (24).
  8. Install screws (25), washers (26, 27).
  9. Tighten screws (25).
  10. Connect ceiling lights and speakers electrical connections as noted in the removal procedure.
  11. If necessary, position hanger (12) and install screw (10), washers (11, 13) and nut (14).

12. Tighten nut (14).
13. Connect valance (4) to the air duct structure and install screws (5) and washers (6).
14. Tighten screws (5).

2-3.7.i Adjustment/Test (Not Applicable)

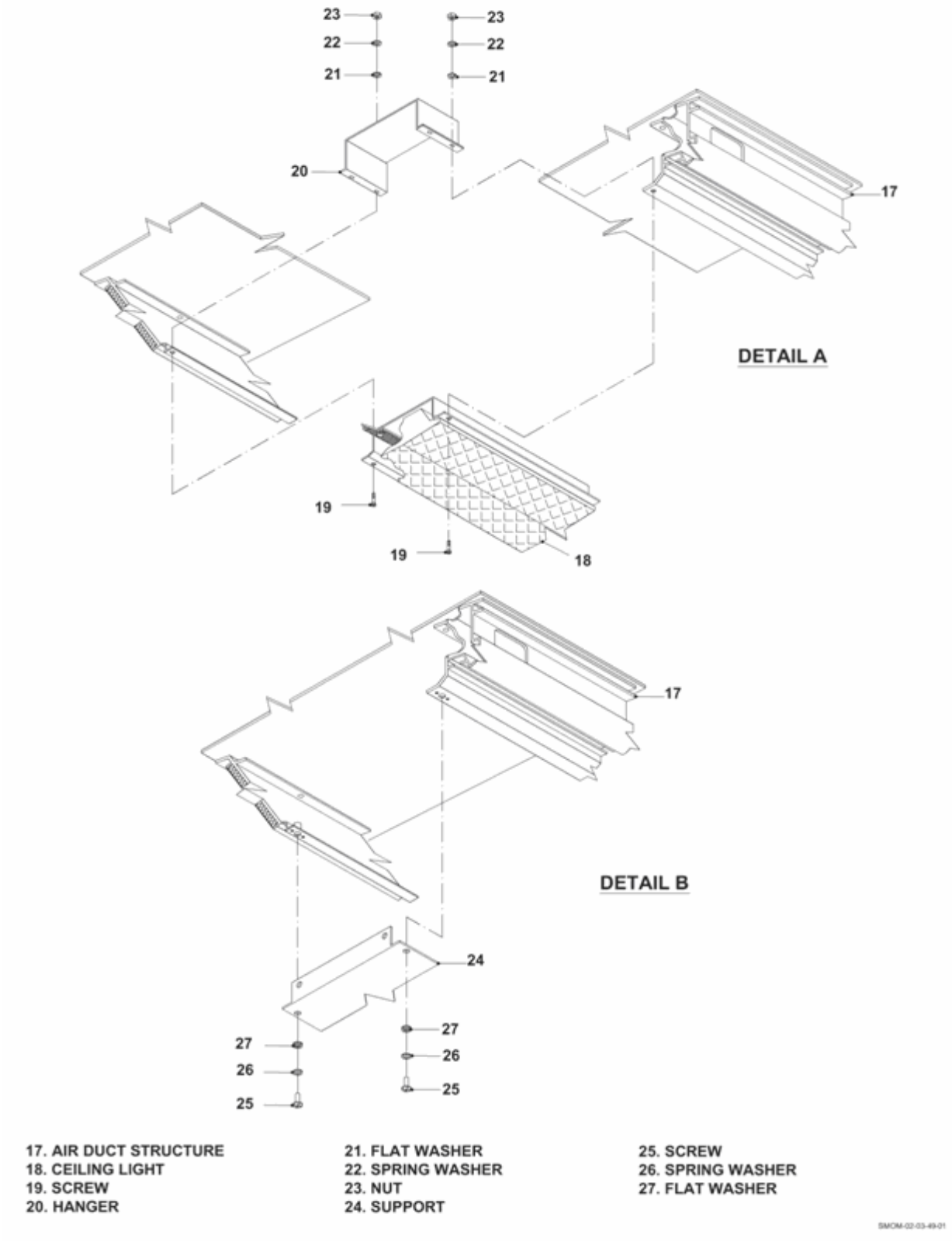


Figure 2-3.52 Air Duct – Typical Installation (Sheet 1 of 2)

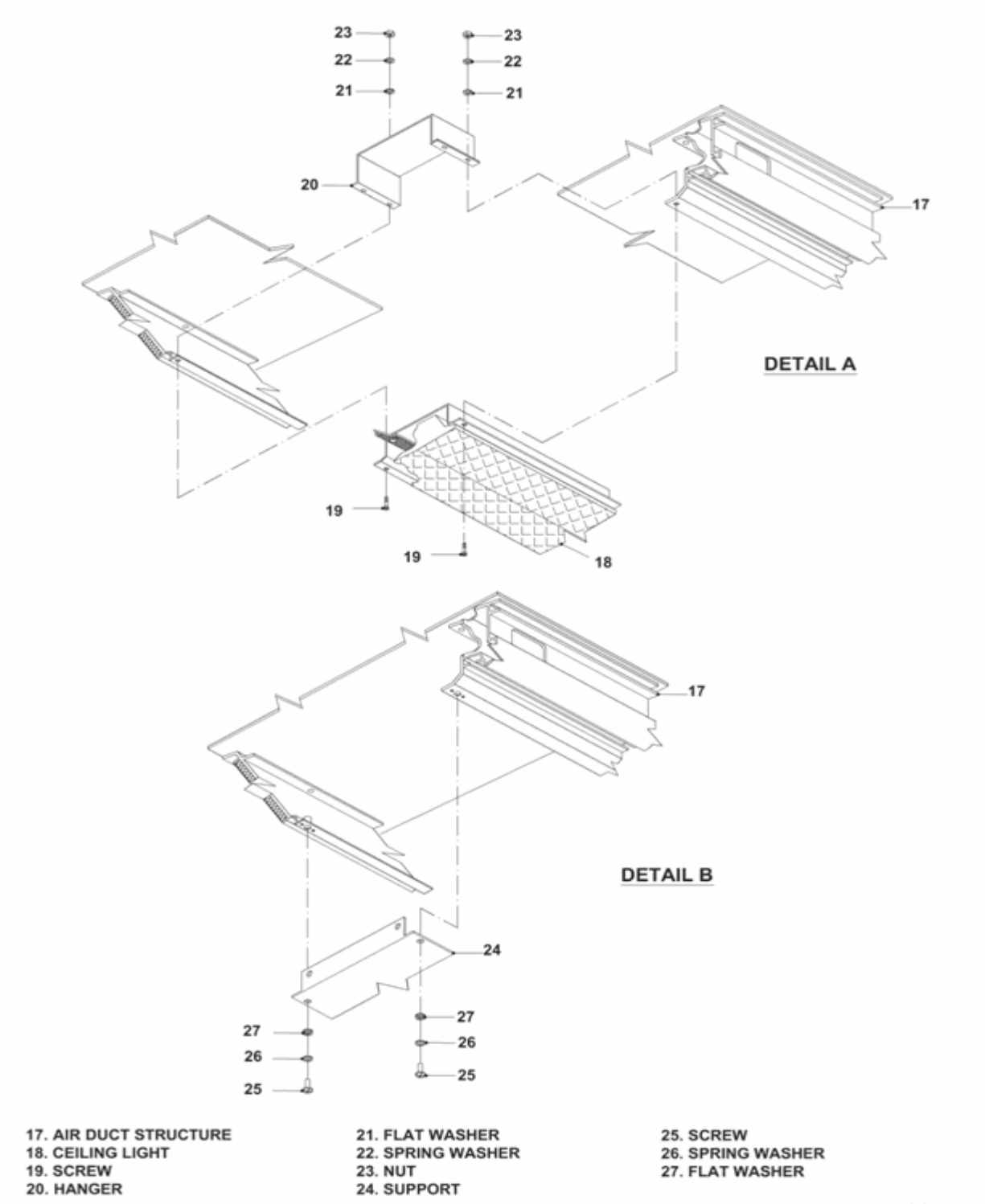


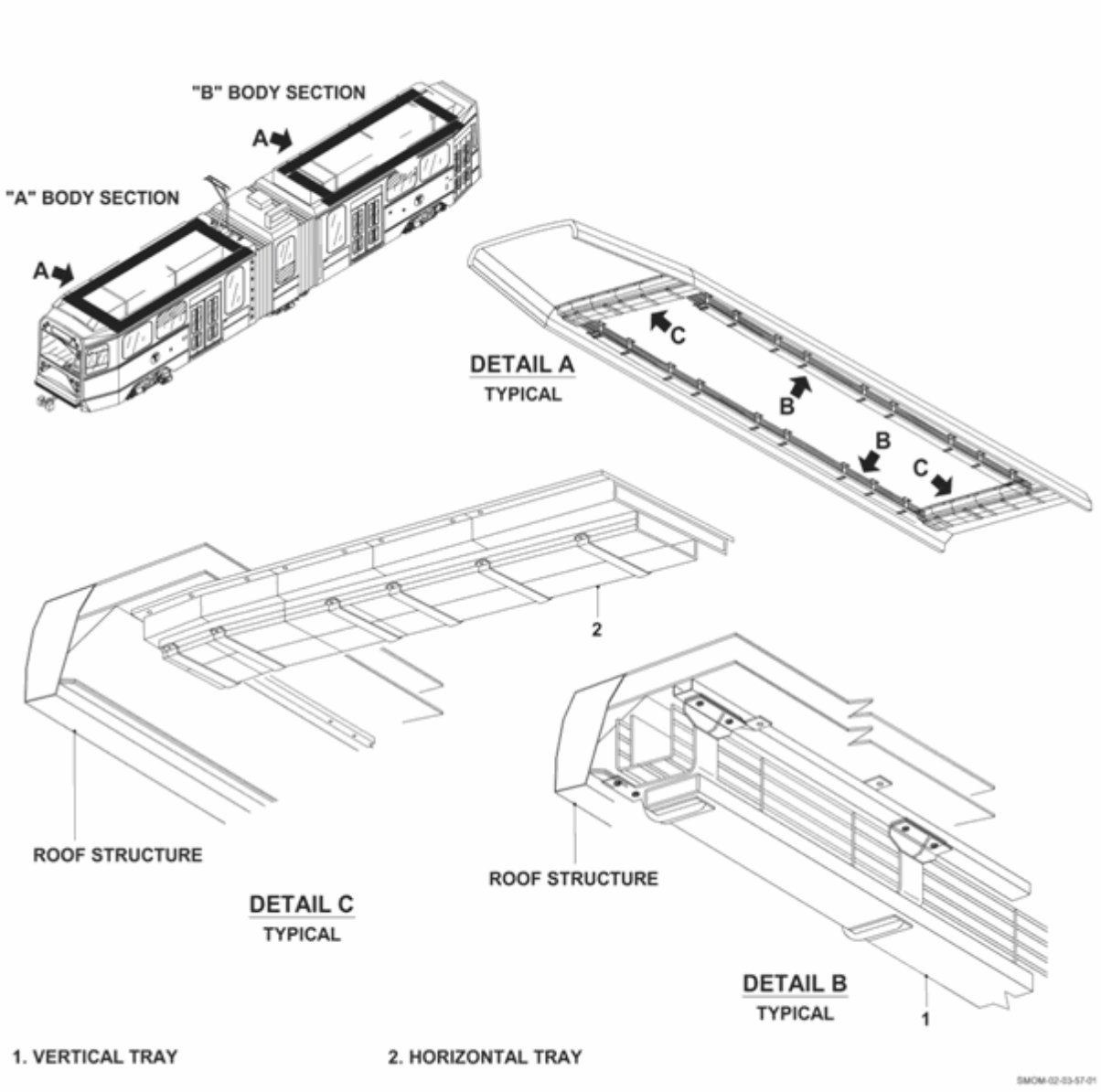
Figure 2-3.52 Air Duct – Typical Installation (Sheet 2 of 2)

2-3.8 Cable Trays

2-3.8.a Description and Theory of Operation

The vehicle is equipped with twenty Cable Trays (Refer to Figure 2-3.53), ten for each “A” / “B” Body Section, to supports the electrical cable connected with several vehicle systems. The Cable Trays are installed under the roof structure and they are easy accessibile from authorized personnel by removing involved valance (for Vertical Tray (1)) (Refer to para 2-3.7) and ceiling panel (for Horizontal Tray (2)) (Refer to para 2-3.2). Cable Trays structure is made of Steel (S275JR / EN 10027/1 type).

Figure 2-3.53 Cable Trays - Location



2-3.8.b Specific Safety Precautions

WARNING: **BEFORE PERFORM CABLE TRAYS MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**
- **REMOVE ELECTRICAL POWER BY LOWERING THE PANTOGRAPH.**
- **SWITCH OFF THE BATTERY CIRCUIT BREAKER (CB 3Q03 – BATTERY BOX).**

2-3.8.c Fault Isolation

For Cable Tray Fault Isolation, refer to Table 2-3.14.

Table 2-3.14 Cable Tray - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Metallic noise.	1. Vibrations.	1. Investigate / Replace / Fasten attaching parts.
	2. Cable Tray(s) loose.	1. Investigate / Replace / Fasten attaching parts.
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten attaching parts.
2. Cable Tray(s) damaged.	1. Vandalism/Impact.	1. Replace. Refer to para 0.

Disassembly

The Cable Tray Disassembly procedures consist in the following main operations:

– Vertical Cable Tray - Typical Removal.

– Horizontal Cable Tray - Typical Removal.

a) Vertical Cable Tray - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Vertical Cable Tray, perform the following typical procedure (Refer to Figure 2-3.54):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Open involved valance (refer to para 2-3.7.d).
  3. Locate Cable Tray to be removed.
  4. Remove tie-wrap that connected the electrical cables to the tray.
  5. Support Vertical Tray (1) and remove screws (9) and washers (10).
  6. Remove gaskets (6) and brackets (7, 8).
  7. Remove screws (2), washers (3) and nuts (5).
  8. Remove Vertical Tray (1).

b) Horizontal Cable Tray - Typical Removal

- **Reference Information.**

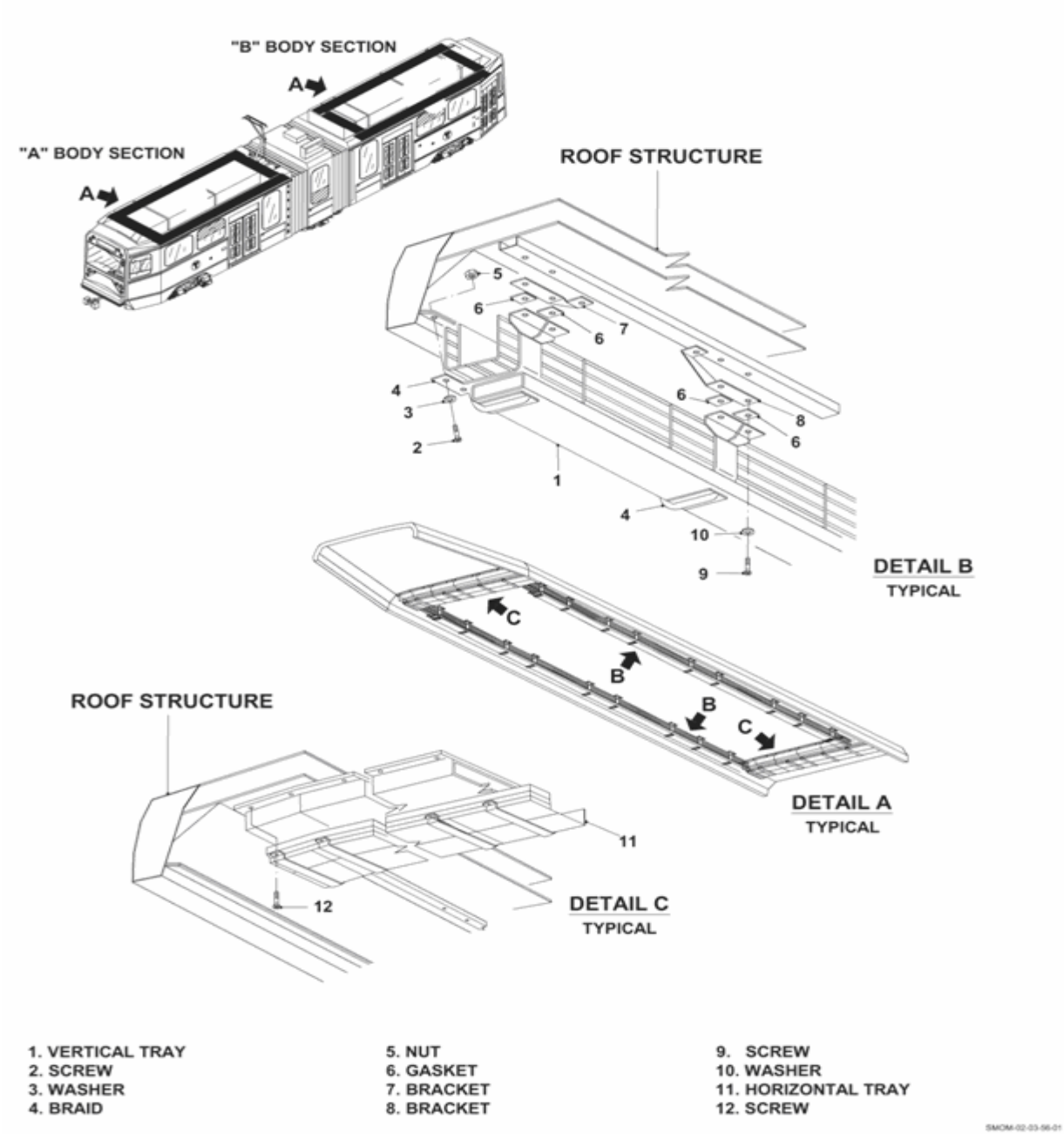
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Horizontal Cable Tray, perform the following typical procedure (Refer to Figure 2-3.54):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Open involved ceiling panel by removing related attaching panels (refer to para 2-3.2.d).

3. Locate Cable Tray to be removed.
4. Remove tie-wrap that connected the electrical cables to the tray.
5. Support Horizontal Tray (11) and remove screws (12).



6. Remove Horizontal Tray (11).

Figure 2-3.54 Cable Tray - Typical Removal

2-3.8.d Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Cable Tray, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean Cable Tray using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Paint each Cable Tray, proceed as follows:

WARNING:	**DURING PAINTING PROCEDURE, WEAR PROTECTIVE CHEMICAL-SPLASH GOGGLES OR FULL FACE SHIELD, AS WELL AS IMPERMEABLE PROTECTIVE CLOTHING. WHERE SPRAY-OVER IS PRESENT, USE A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR FOR ENTIRE SPRAYING TIME END UNTIL ALL VAPORS AND MISTS ARE GONE.**

WARNING:	**DURING PAINTING TO PREVENT THE CREATION OF FLAMMABLE CONCENTRATIONS OF VAPOR IN AIR, GOOD NATURAL VENTILATION AND, IF NECESSARY, LOCAL EXHAUST VENTILATION SHOULD BE PROVIDED.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Clean and dry Cable Tray using cleaning rags and compressed air.
3. Paint Cable Tray using Vynil Lacquer RAL 7024 colour.

2-3.8.e Inspection

- **Reference Information.**
  1. Tools /Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Cable Tray proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect tray for damage/deformation and correct installation.
  3. Inspect paint for damage/corrosion.
  4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.8.f Repair

Cable Tray seriously damaged should be replaced.

2-3.8.g Reassembly

The Cable Tray Reassembly procedures consist in the following main operations:

– Vertical Cable Tray - Typical Installation.

– Horizontal Cable Tray - Typical Installation.

a) Vertical Cable Tray - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Vertical Cable Tray, perform the following typical procedure (Refer to Figure 2-3.55):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position Vertical Tray (1).
  3. Position gaskets (6) and brackets (7, 8).
  4. Install screws (9) and washers (10).
  5. Install screws (2), washers (3) and nuts (5).
  6. Tighten screws (9) and nuts (5) as required.
  7. Position the electrical cables into the tray and lock them by installing tie-wraps.
  8. Close involved valance (refer to para 2-3.7.h).

b) Horizontal Cable Tray - Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Horizontal Cable Tray, perform the following typical procedure (Refer to):

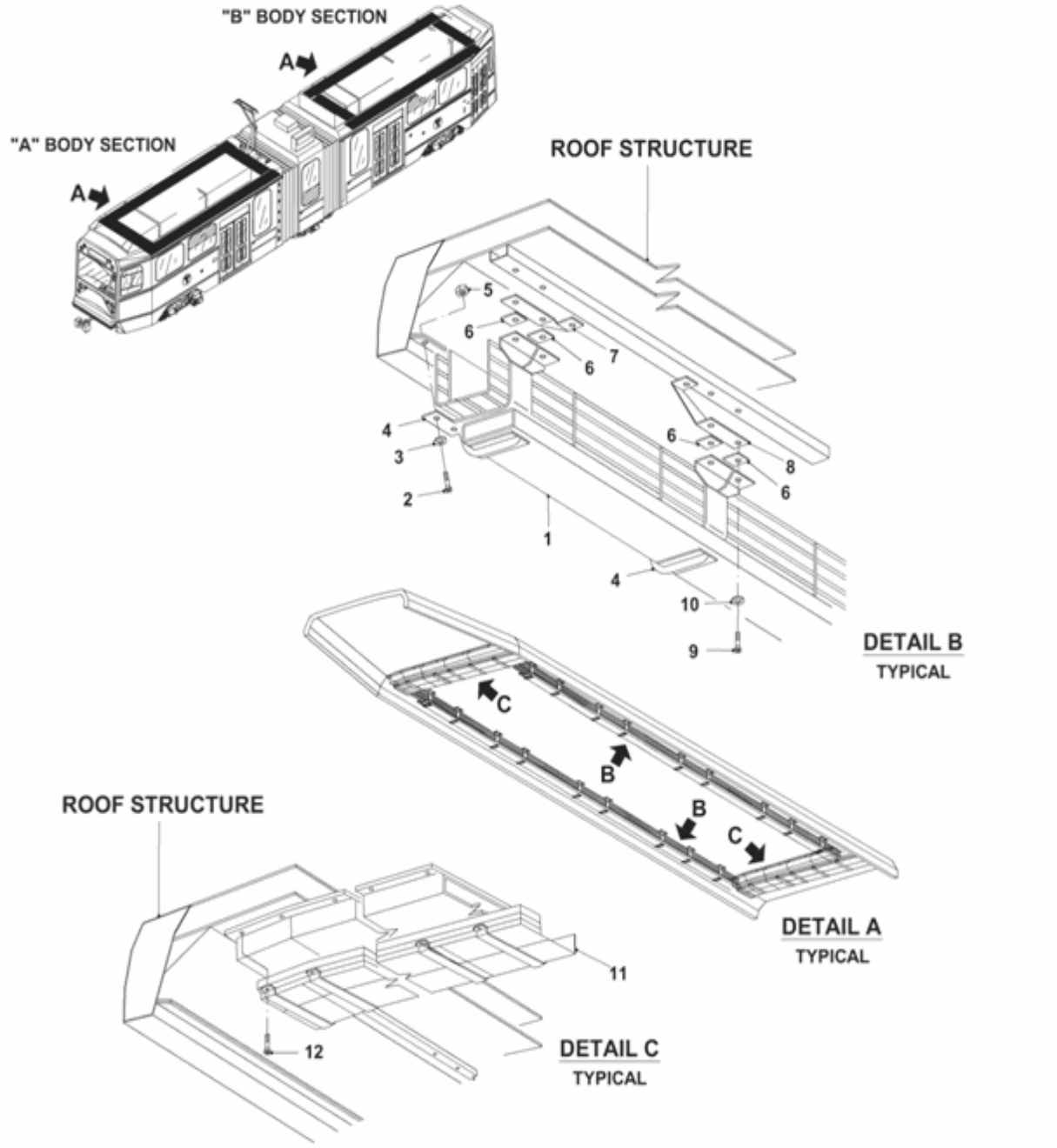
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position Horizontal Tray (11).
  3. Install and tighten screws (12).

4. Position the electrical cables into the tray and lock them by installing tie-wraps.
5. Close involved ceiling panel (refer to para 2-3.2.h).

2-3.8.h Adjustment/Test

The vehicle is equipped with twenty Cable Trays (Refer to Figure 2-3.53), ten for each “A” / “B” Body Section, to supports the electrical cable connected with several vehicle systems. The Cable Trays are installed under the roof structure and they are easy accessibile from authorized personnel by removing involved valance (for Vertical Tray (1)) (Refer to para 2-3.7) and ceiling panel (for Horizontal Tray (2)) (Refer to para

Figure 2-3.55 Cable Tray - Typical Installation



1. VERTICAL TRAY
2. SCREW
3. WASHER
4. BRAID
5. NUT
6. GASKET
7. BRACKET
8. BRACKET
9. SCREW
10. WASHER
11. HORIZONTAL TRAY
12. SCREW

SMOM-02-03-56-01

2-3.9 Heater Protections

2-3.9.a Description and Theory of Operation

The vehicle is equipped with several heater protections (Refer to Figure 2-3.56), made of stainless steel, to protect the heater elements and to provide safety for the passengers.

The heater protections are installed under, at the back of the passenger seats and in the handicapped wheelchair zone as shown in the figure.

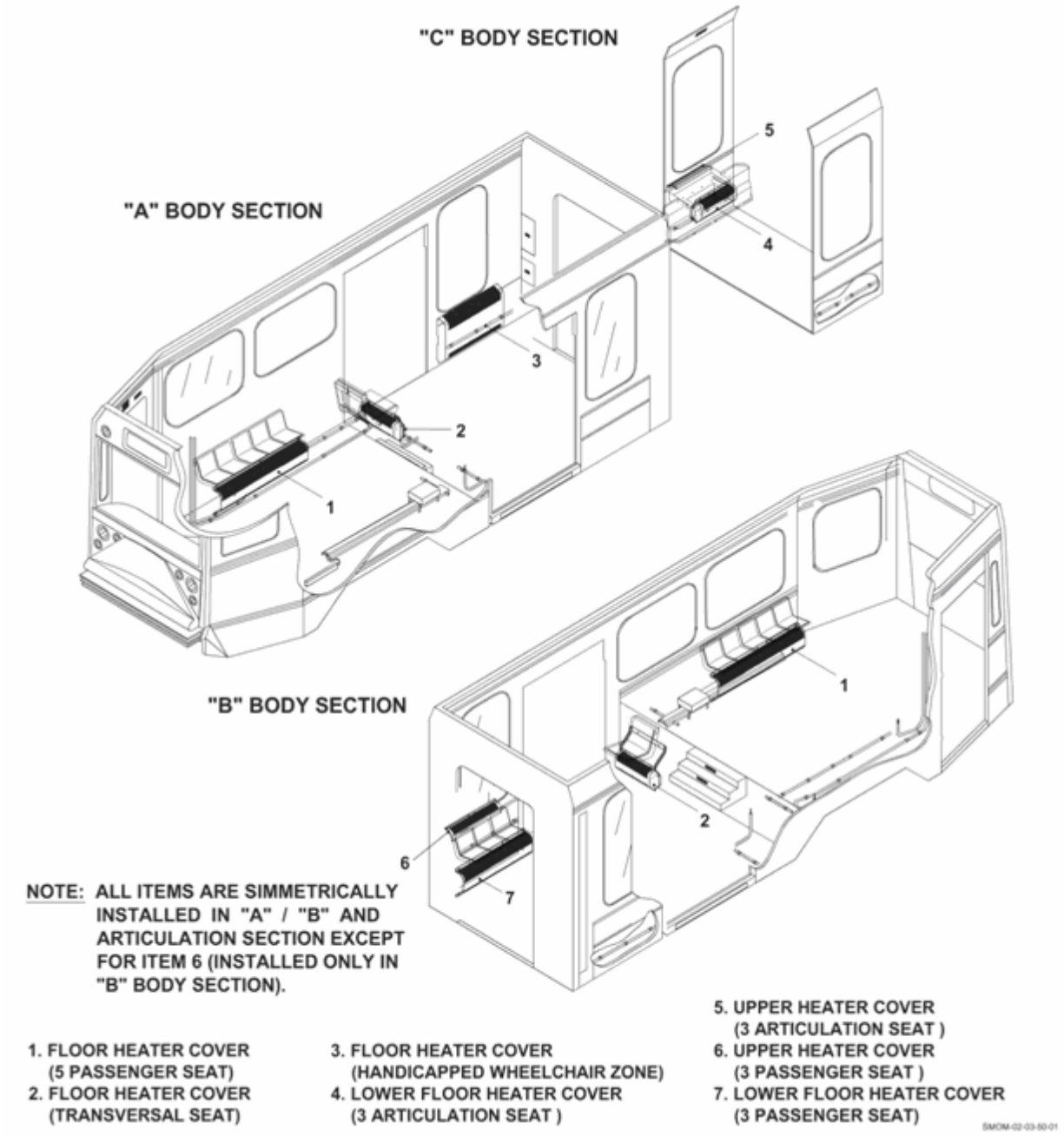

"C" BODY SECTION
"A" BODY SECTION
"B" BODY SECTION
1
2
3
4
5
6
7
NOTE: ALL ITEMS ARE SIMMETRICALLY INSTALLED IN "A" / "B" AND ARTICULATION SECTION EXCEPT FOR ITEM 6 (INSTALLED ONLY IN "B" BODY SECTION).
1. FLOOR HEATER COVER (5 PASSENGER SEAT)
2. FLOOR HEATER COVER (TRANSVERSAL SEAT)
3. FLOOR HEATER COVER (HANDICAPPED WHEELCHAIR ZONE)
4. LOWER FLOOR HEATER COVER (3 ARTICULATION SEAT)
5. UPPER HEATER COVER (3 ARTICULATION SEAT)
6. UPPER HEATER COVER (3 PASSENGER SEAT)
7. LOWER FLOOR HEATER COVER (3 PASSENGER SEAT)

Figure 2-3.56 Heater Protections - Location

2-3.9.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORM HEATER PROTECTIONS MAINTENANCE PROCEDURE, OBSERVE THE MBTA REGULATIONS TO:**
> - **REMOVE ELECTRICAL POWER BY LOWERING THE PANTOGRAPH.**
> - **SWITCH OFF THE BATTERY CIRCUIT BREAKER (CB 3Q03 – BATTERY BOX).**

2-3.9.c Fault Isolation

For Heater Protections Fault Isolation, refer to Table 2-3.15.

Table 2-3.15 Heater Protections - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Metallic noise.	1. Vibrations.	1. Investigate / Replace / Fasten attaching parts.
1. Attaching parts defective / loose.	1. Vibrations.	1. Investigate / Replace / Fasten.
2. Heater Protection(s) damaged.	1. Vandalism / Impact.	1. Replace.

2-3.9.d Disassembly

The Heater Protections Disassembly procedures consist in the following main operations:

– Floor Heater Protection (5 passenger seat) – Typical Removal
– Floor Heater Protection (transversal seat) – Typical Removal
– Floor Heater Protection (handicapped zone) – Typical Removal
– Heater Protection (articulation seat) – Typical Removal
– Heater Protection (3 passenger seat) – Typical Removal

a) Floor Heater Protection (5 passenger seat) – Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor Heater Protection, perform the following typical procedure (Refer to Figure 2-3.57):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Heater Protection to be removed.
  3. Support involved Heater Protection (1).
  4. Remove screws (2) and washers (3, 4).
  5. Remove heater protection (1).

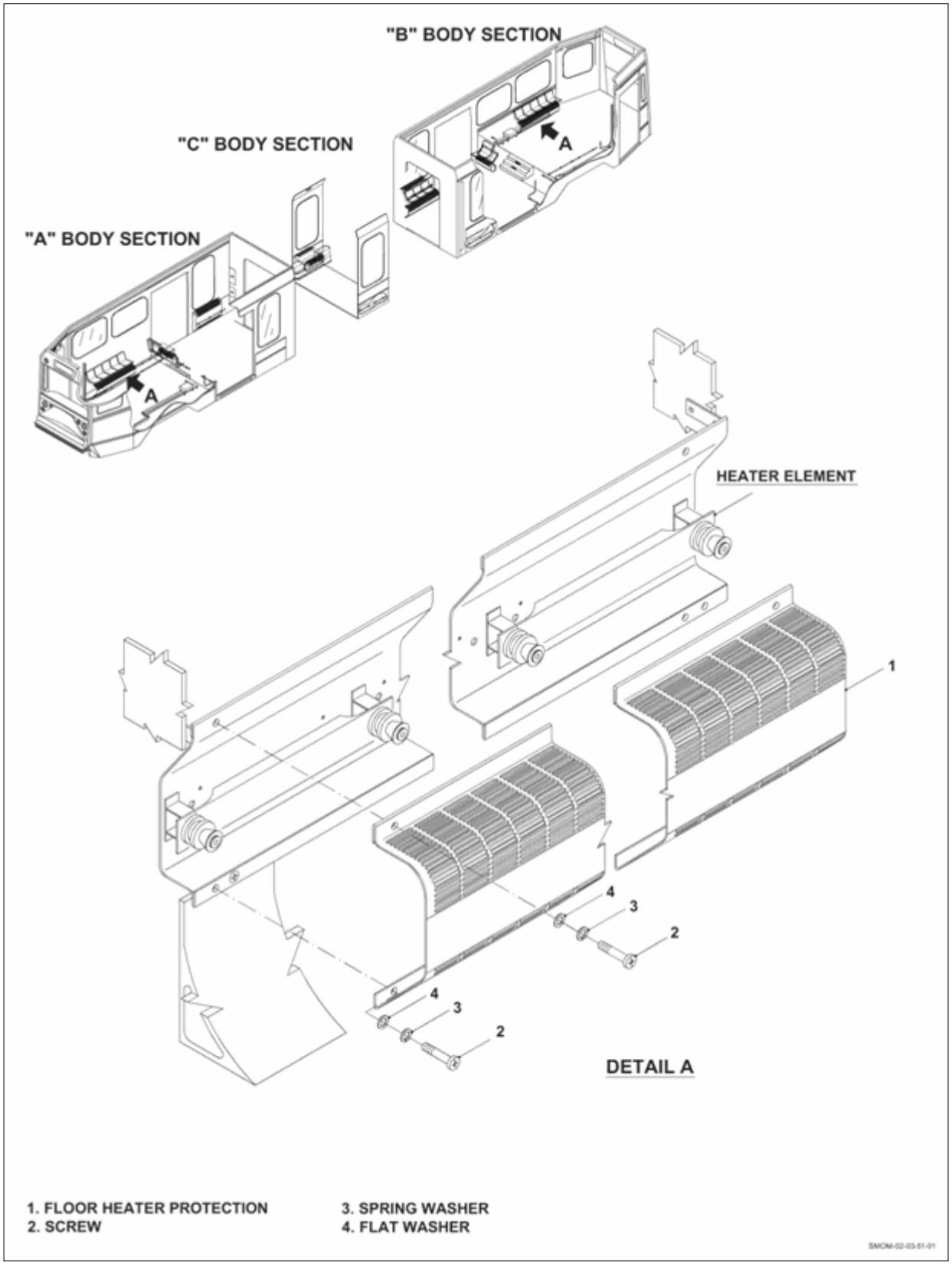

"B" BODY SECTION
"C" BODY SECTION
"A" BODY SECTION
A
A
HEATER ELEMENT
1
4
3
2
4
3
2
DETAIL A
1. FLOOR HEATER PROTECTION
2. SCREW
3. SPRING WASHER
4. FLAT WASHER
SMOM-02-03-51-01

Figure 2-3.57 Floor Heater Protection (5 passenger seat) – Typical Removal

b) Floor Heater Protection (transversal seat) – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Floor Heater Protection, perform the following procedure (Refer to Figure 2-3.58):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Heater Protection to be removed.
  3. Support involved Heater Protection (1).
  4. Remove screws (2) and washers (3, 4).
  5. Remove heater protection (1).

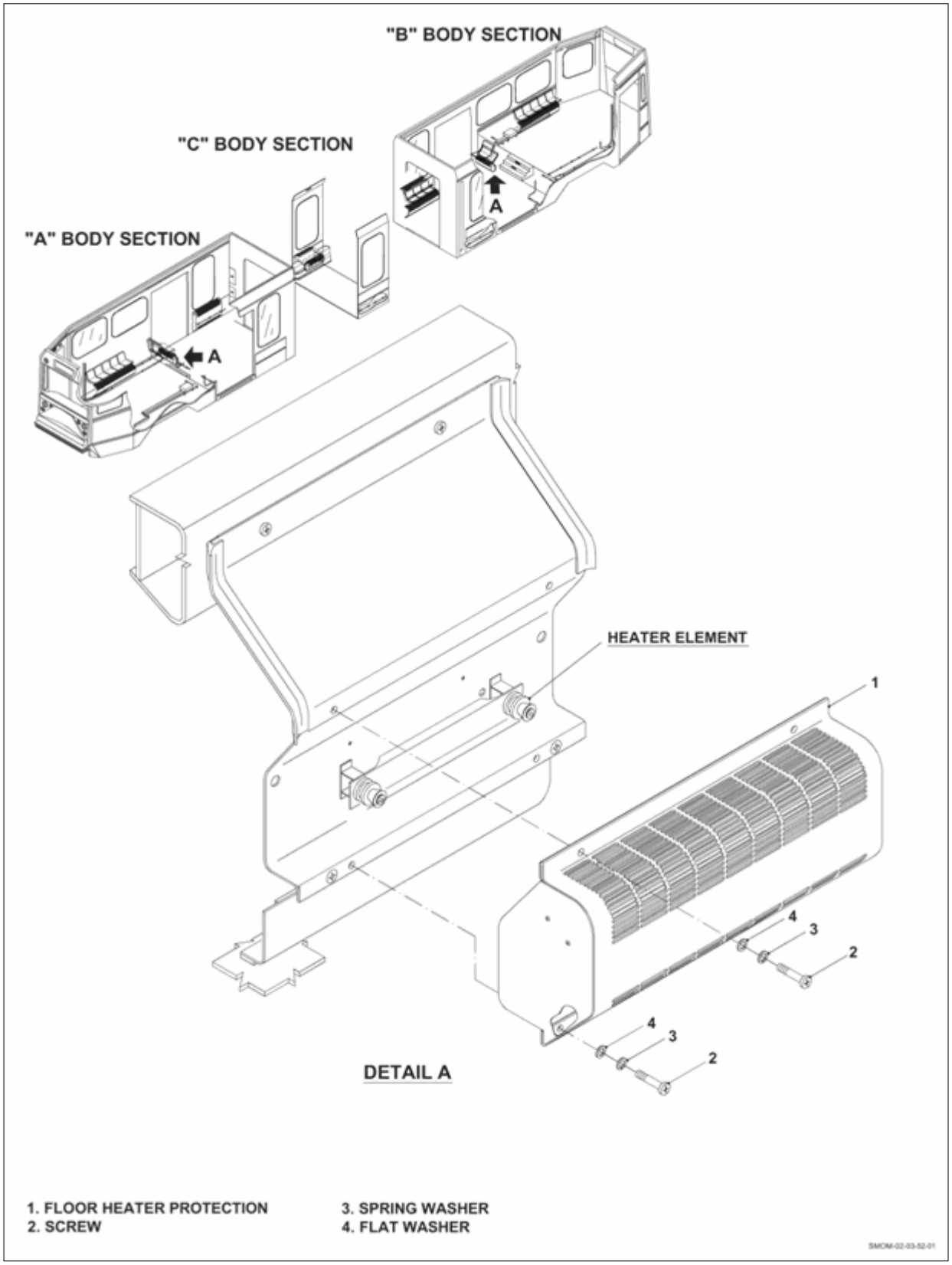

"B" BODY SECTION
"C" BODY SECTION
"A" BODY SECTION
A
A
HEATER ELEMENT
1
4
3
2
4
3
2
DETAIL A
1. FLOOR HEATER PROTECTION
2. SCREW
3. SPRING WASHER
4. FLAT WASHER
SMOM-02-03-52-01

Figure 2-3.58 Floor Heater Protection (transversal seat) – Typical Removal

c) Floor Heater Protection (handicapped zone) – Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor Heater Protection, perform the following procedure (Refer to Figure 2-3.59):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Heater Protection to be removed.
  3. Support involved Heater Protection (2).
  4. Remove screws (3) and washers (4, 5).
  5. Remove heater protection (2).
  6. Remove gasket (1) from heater protection and discard it.

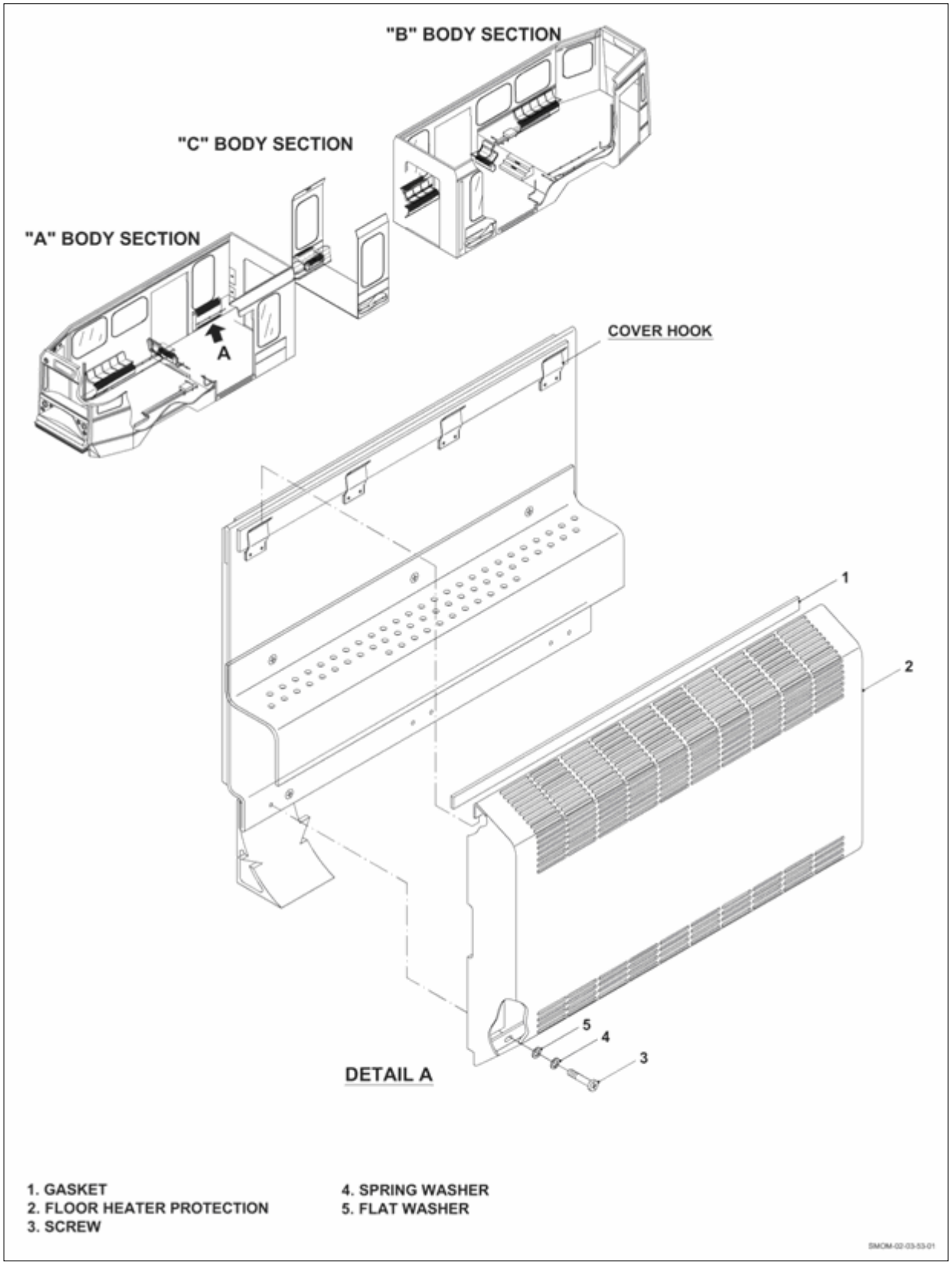

"B" BODY SECTION
"C" BODY SECTION
"A" BODY SECTION
A
COVER HOOK
1
2
5
4
3
DETAIL A
1. GASKET
2. FLOOR HEATER PROTECTION
3. SCREW
4. SPRING WASHER
5. FLAT WASHER
SMOM-02-03-53-01

Figure 2-3.59 Floor Heater Protection (handicapped zone) – Typical Removal

d) Heater Protections (articulation seat) – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Heater Protections, perform the following procedure (Refer to Figure 2-3.60):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Heater Protections to be removed.
  3. Remove screws (1).
  4. Remove heater protection (2).
  5. Support Heater Protection (3).
  6. Remove screws (4) and washers (5, 6).
  7. Remove heater protection (3).

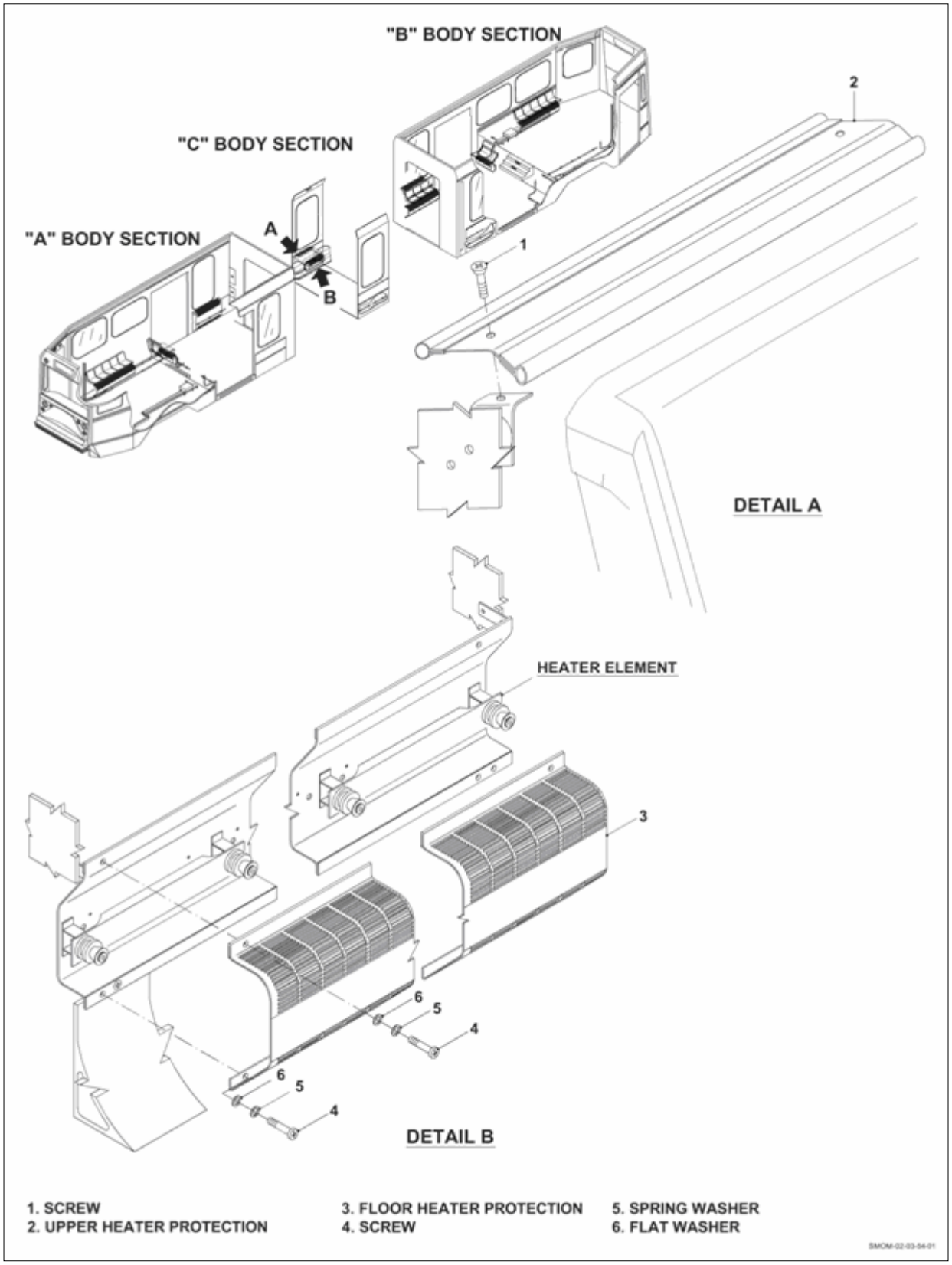

"B" BODY SECTION
"C" BODY SECTION
"A" BODY SECTION
A
B
1
2
DETAIL A
HEATER ELEMENT
3
6
5
4
6
5
4
DETAIL B
1. SCREW
2. UPPER HEATER PROTECTION
3. FLOOR HEATER PROTECTION
4. SCREW
5. SPRING WASHER
6. FLAT WASHER
SMOM-02-03-54-01

Figure 2-3.60 Heater Protections (articulation seat) – Typical Removal

e) Heater Protections (3 passenger seat) – Typical Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Heater Protection, perform the following procedure (Refer to Figure 2-3.61):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Locate Heater Protections to be removed.
  3. Remove screws (1), washers (2, 3) and nuts (5).
  4. Disconnect heater protection (4) from cover hook and remove it.
  5. Support Heater Protection (6).
  6. Remove screws (7) and washers (8, 9).
  7. Remove heater protection (6).

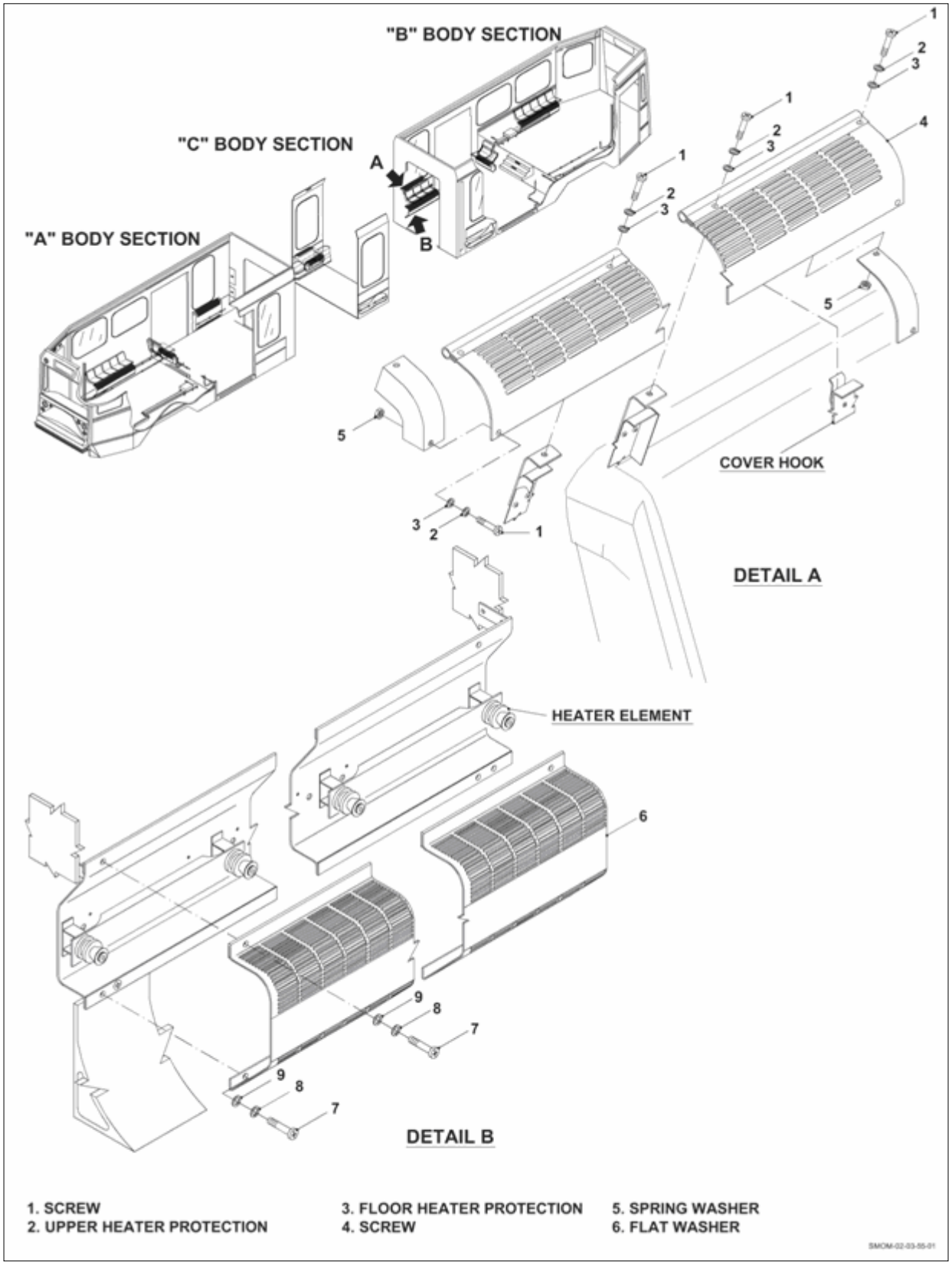

"B" BODY SECTION
"C" BODY SECTION
"A" BODY SECTION
A
B
COVER HOOK
DETAIL A
HEATER ELEMENT
DETAIL B
1. SCREW
2. UPPER HEATER PROTECTION
3. FLOOR HEATER PROTECTION
4. SCREW
5. SPRING WASHER
6. FLAT WASHER

Figure 2-3.61 Heater Protections (3 passenger seat) – Typical Removal

2-3.9.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Heater Protection, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean Heater Protection using cleaning rags and compressed air. For vehicle as a whole cleaning procedure, refer to para 2-2.e.

b) Painting (Not Applicable)

2-3.9.f Inspection

- **Reference Information.**
  1. Tools /Equipment(Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Heater Protection proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect heater protection for damage/deformation and correct installation.
  3. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-3.9.g Repair

Heater Protection seriously damaged should be replaced.

2-3.9.h Reassembly

The Heater Protections Reassembly procedures consist in the following main operations:

– Floor Heater Protection (5 passenger seat) – Typical Installation
– Floor Heater Protection (transversal seat) – Typical Installation
– Floor Heater Protection (handicapped zone) – Typical Installation
– Heater Protection (articulation seat) – Typical Installation
– Heater Protection (3 passenger seat) – Typical Installation

a) Floor Heater Protection (5 passenger seat) – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Floor Heater Protection, perform the following typical procedure (Refer to Figure 2-3.62):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position heater protection (1).
  3. Install screws (2) and washers (3, 4).
  4. Tighten screws (2) as required.

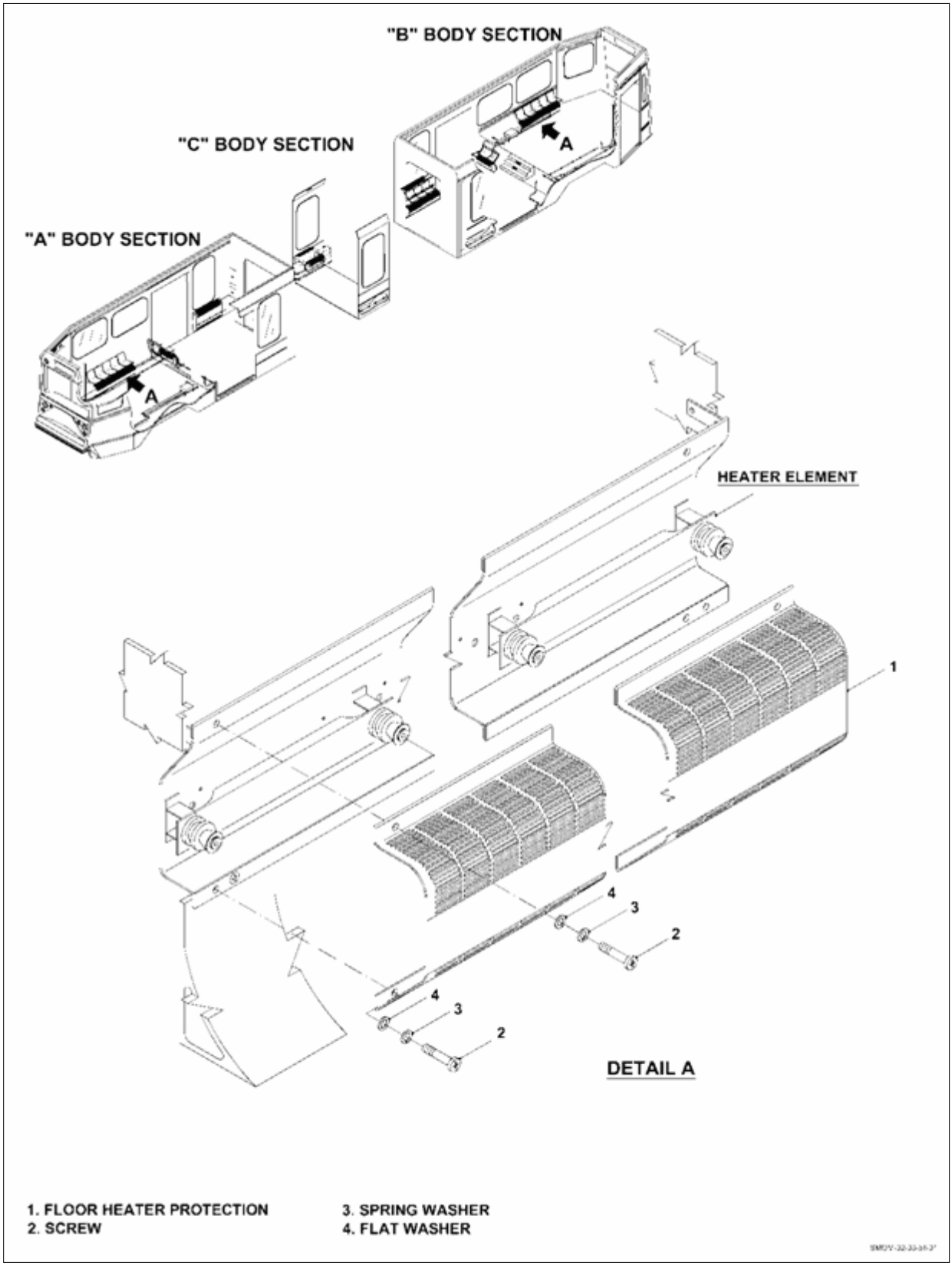


Figure 2-3.62 Floor Heater Protection (5 passenger seat) – Typical Installation

b) Floor Heater Protection (transversal seat) – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Floor Heater Protection, perform the following procedure (Refer to Figure 2-3.63):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position heater protection (1).
  3. Install screws (2) and washers (3, 4).
  4. Tighten screws (2) as required.

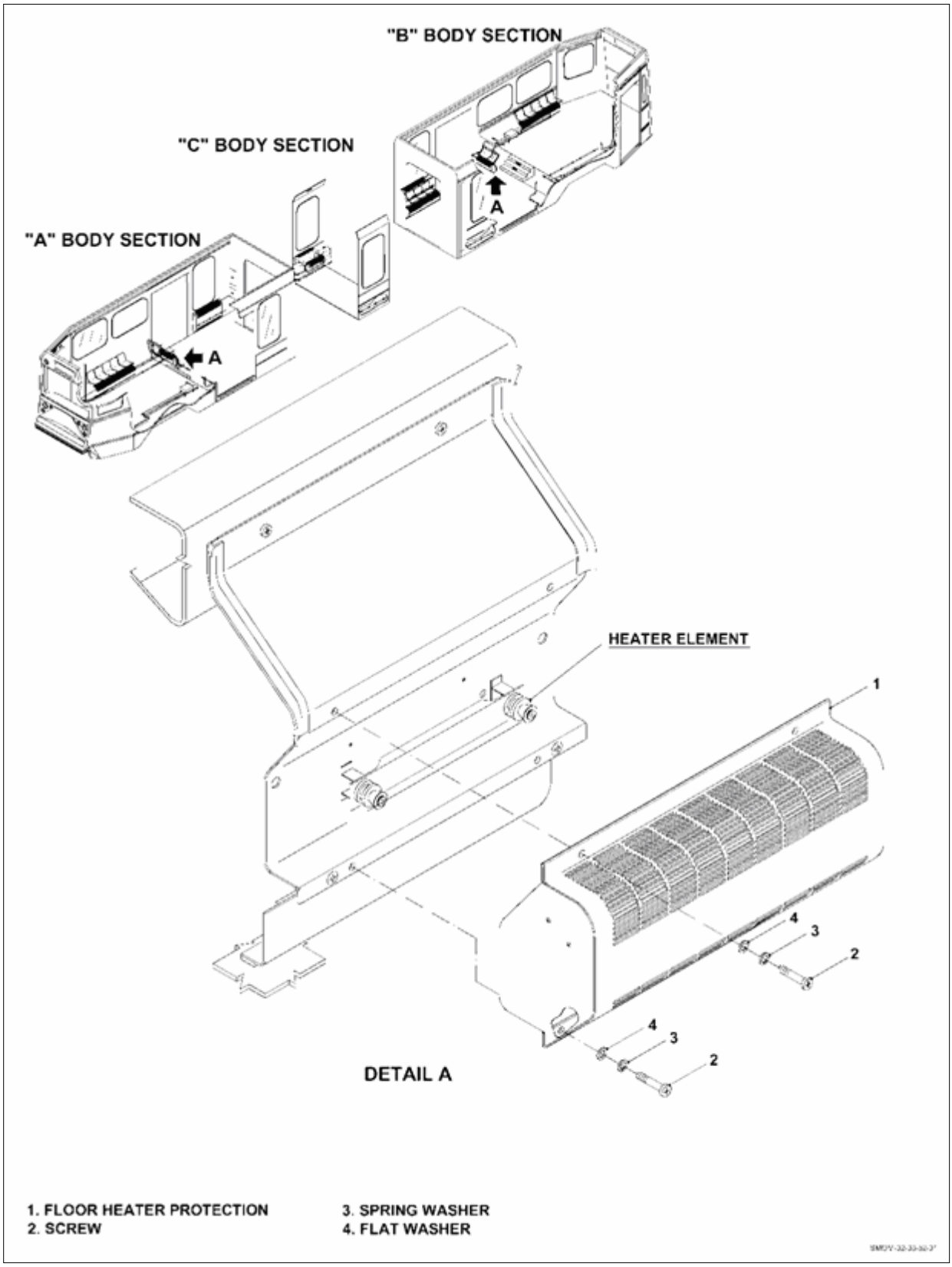


Figure 2-3.63 Floor Heater Protection (transversal seat) – Typical Installation

c) Floor Heater Protection (handicapped zone) – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Gasket, P/N 6.11.145, Q.ty as required.

- **Procedure.**

  To Install Floor Heater Protection, perform the following procedure (Refer to Figure 2-3.64):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean involved heater protection surface and install new gasket (1).
  3. Position heater protection (2).
  4. Install screws (3) and washers (4, 5).
  5. Tighten screws (3) as required.

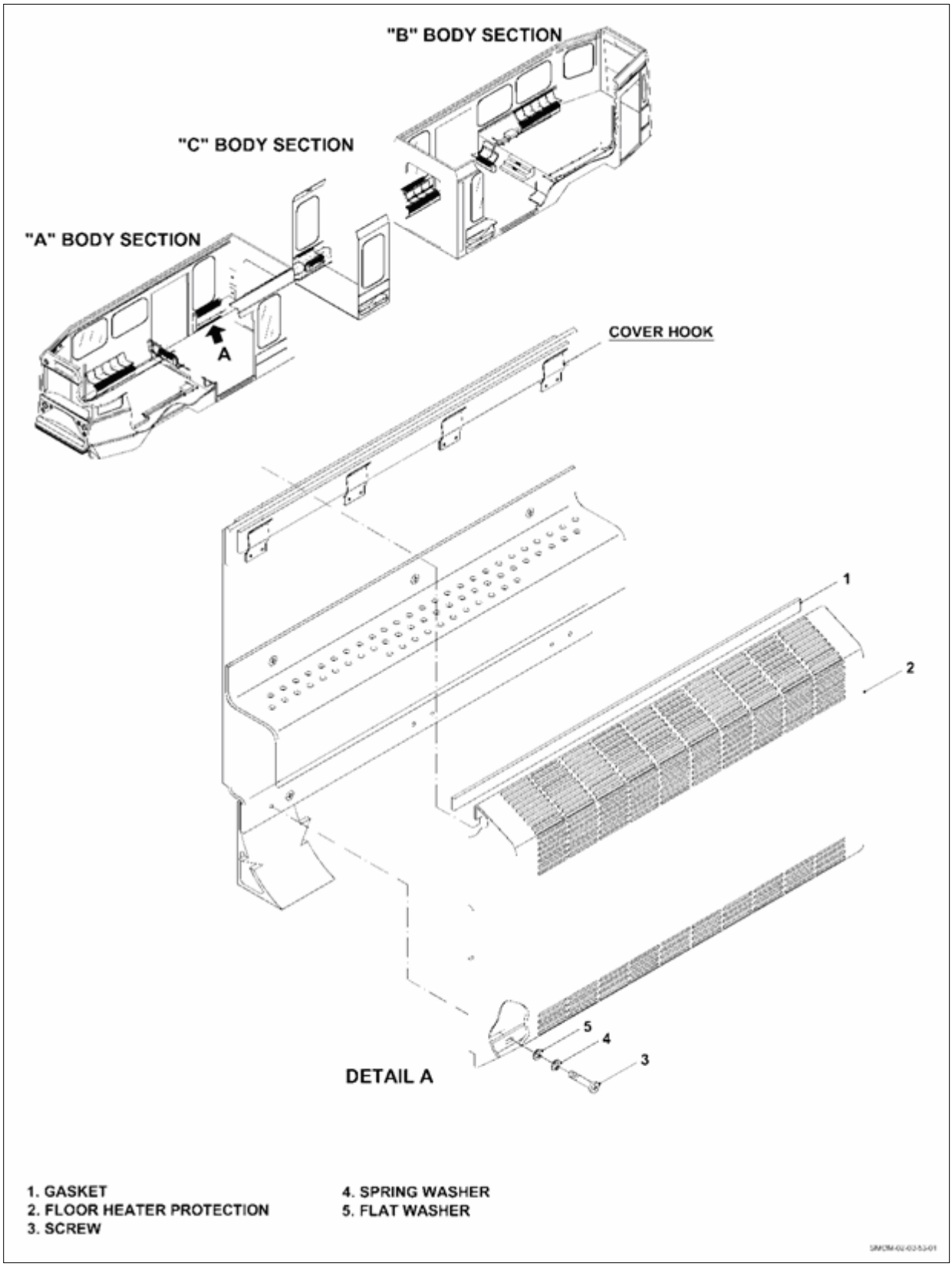


Figure 2-3.64 Floor Heater Protection (handicapped zone) – Typical Installation

d) Heater Protections (articulation seat) – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Heater Protections, perform the following procedure (Refer to Figure 2-3.65):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position upper heater protection (2).
  3. Install and tighten screws (1).
  4. Position lower heater protection (3).
  5. Install screws (4) and washers (5, 6).
  6. Tighten screws (4) as required.

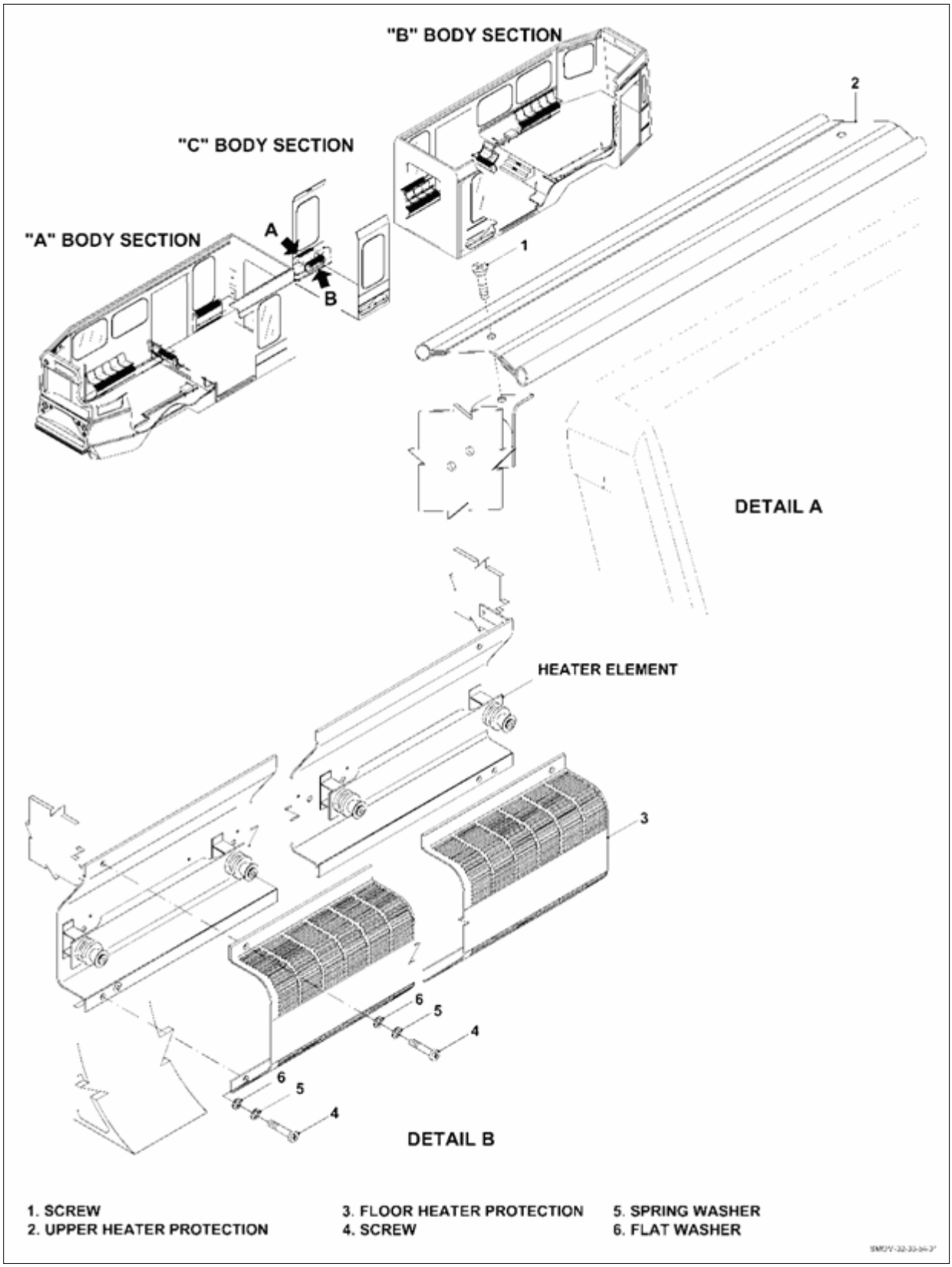


Figure 2-3.65 Heater Protections (articulation seat) – Typical Installation

e) Heater Protections (3 passenger seat) – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Heater Protection, perform the following procedure (Refer to Figure 2-3.66):

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position upper heater protection (4).
  3. Install screws (4), washers (5, 6) and nuts (5).
  4. Tighten nuts (5) as required.
  5. Position lower heater protection (6).
  6. Install screws (7), washers (8, 9).
  7. Tighten screws (7) as required.

2-3.9.i Adjustment/Test (Not Applicable)

The Operator's Cab (Refer to Figure 2-4.1) includes all controls necessary for vehicle operation and is duplicated at both ends of the vehicle. Each Cab provides isolation from passengers via the cab dividing wall, and locking door. The Operator's Cab is designed to provide the operator with maximum outward visibility and comfortable placement of the vehicle controls. The Operator Cab includes the Operator Console designed to accomplish the vehicle system controls installation. For Operator’s Cab Controls Description and Operation, refer to Section 7. The Operator Cab Assembly includes the operator’s Seat, Windishied Wiper and Wiper Wash System, Rear View Mirrors, Cab Dividing Wall, Cab Console and Panels and Windshield Heater System.

For Operator’s Cab Heater System Description, Operation and Maintenance procedures refer to Section 5 of this Manual.

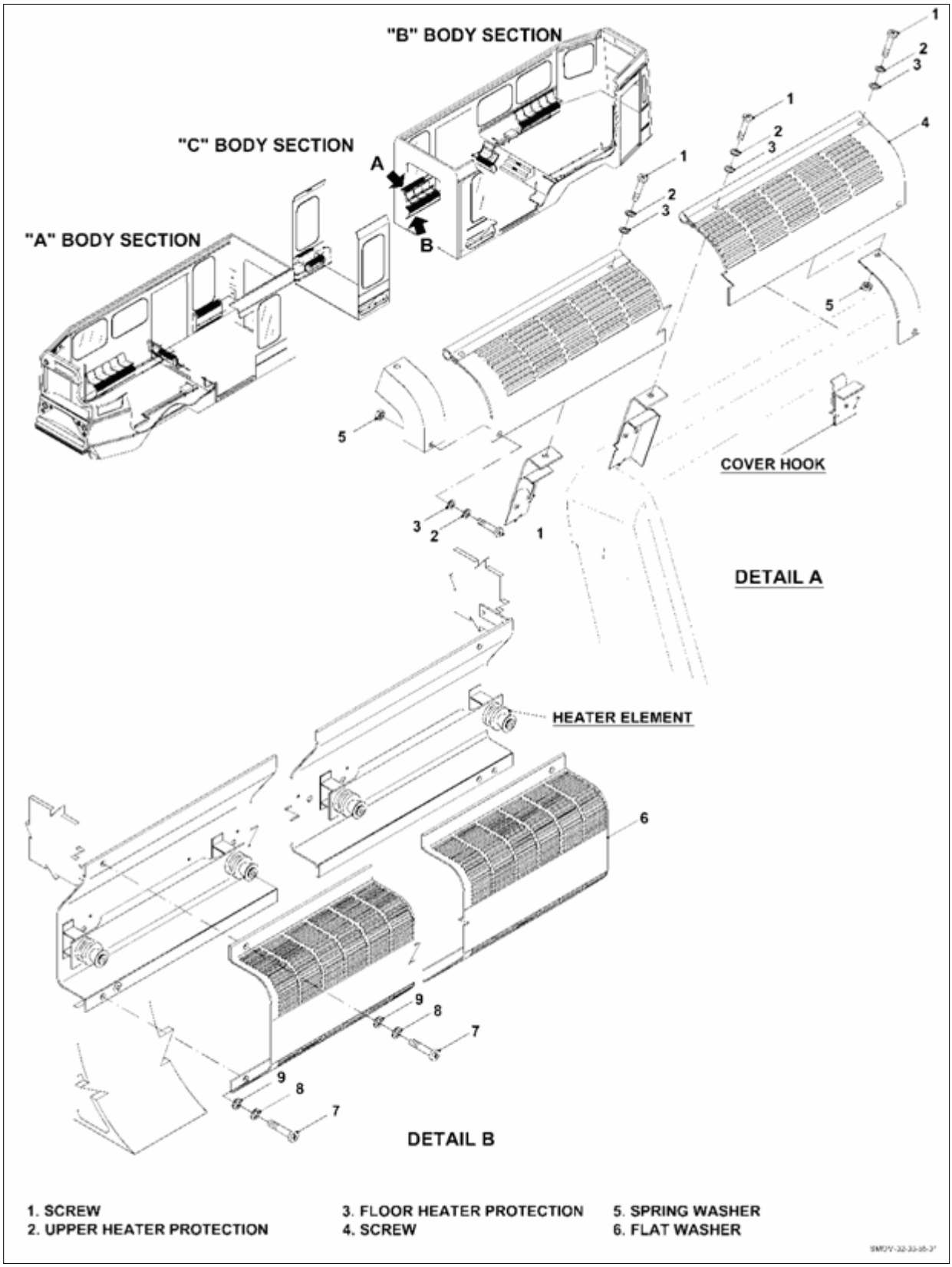


Figure 2-3.66 Heater Protections (3 passenger seat) – Typical Installation

2-4 Operator's Cab

2-4.a Description and Theory of Operation

The Operator's Cab (Refer to Figure 2-4.1) includes all controls necessary for vehicle operation and is duplicated at both ends of the vehicle. Each Cab provides isolation from passengers via the cab dividing wall, and locking door. The Operator's Cab is designed to provide the operator with maximum outward visibility and comfortable placement of the vehicle controls. The Operator Cab includes the Operator Console designed to accomplish the vehicle system controls installation. For Operator's Cab Controls Description and Operation, refer to Section 7. The Operator Cab Assembly includes the operator's Seat, Windishied Wiper and Wiper Wash System, Rear View Mirrors, Cab Dividing Wall, Cab Console and Panels and Windshield Heater System.

For Operator's Cab Heater System Description, Operation and Maintenance procedures refer to Section 5 of this Manual.

For Windshield Description, Operation and Maintenance procedures refer to para 2-2.5.2.

For Operator's Console Description, Operation and Maintenance procedures refer to Section 7 of this Manual.

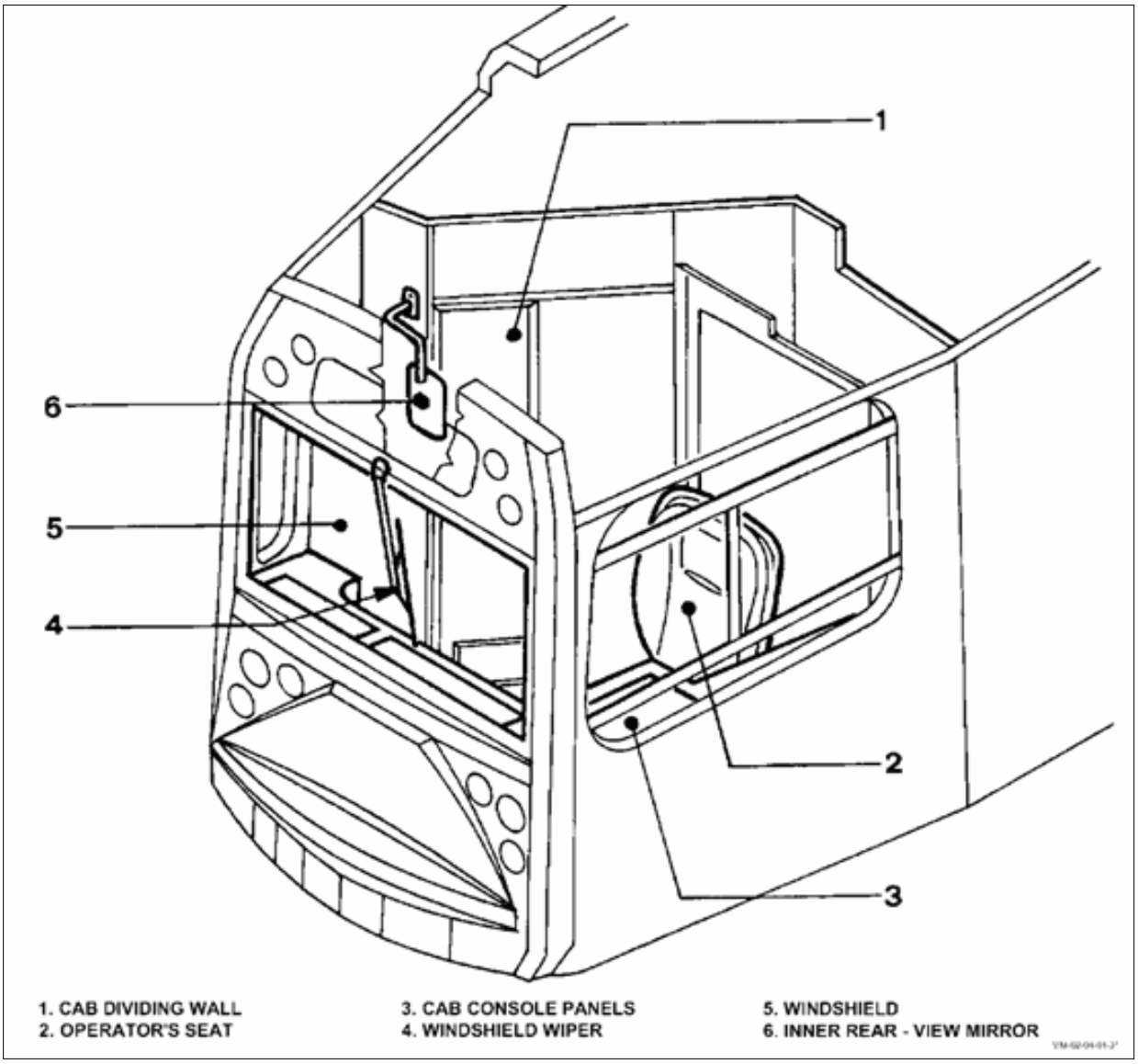


Figure 2-4.1 Operator's Cab Assemblies - Location

2-4.b Specific Safety Precautions

Since the Operator's Cab consists of separate items, the "Operator's Cab" Specific Safety Precautions are described in the para(s) related to each item.

2-4.c Fault Isolation

Since the Operator's Cab consists of separate items, the Fault Isolation is described in the para(s) related to each item, as shown in Table 2-4.1.

Table 2-4.1 Operator's Cab Components - Fault Isolation

COMPONENTS	REFERENCE (Para)
Operator's Seat	2-4.1.c
Windshield Wiper	2-4.2.c
External Rear View Mirrors	2-4.3.1.c
Inner Rear-View Mirrors	2-4.3.2.c
Cab Dividing Wall	2-4.4.c
Cab Console and panels	2-4.5.c
Windshield Heater System	2-4.6.c

2-4.d Disassembly

Since the Operator's Cab consists of separate items, the Disassembly is described in the para(s) related to each item, as shown in Table 2-4.2.

Table 2-4.2 Operator's Cab Components - Disassembly

COMPONENTS	REFERENCE (Para)
Operator's Seat	2-4.1.d
Windshield Wiper	2-4.2.d
External Rear View Mirrors	2-4.3.1.d
Inner Rear-View Mirrors	2-4.3.2.d
Cab Dividing Wall	2-4.4.d
Cab Console and panels	2-4.5.d
Windshield Heater System	2-4.6.d

2-4.e Cleaning/Painting

Since the Operator's Cab consists of separate items, the Cleaning/Painting is described in the para(s) related to each item, as shown in Table 2-4.3.

Table 2-4.3 Operator's Cab Components - Cleaning/Painting

COMPONENTS	CLEANING REFERENCE (Para)	PAINTING REFERENCE (Para)
Operator's Seat	2-4.1.e a)	Not Applicable
Windshield Wiper	2-4.2.e a)	Not Applicable
External Rear View Mirrors	2-4.3.1.e a)	Not Applicable
Inner Rear-View Mirrors	2-4.3.2.e a)	Not Applicable
Cab Dividing Wall	2-4.4.e a)	2-4.4.e b)
Cab Console and panels	2-4.5.e a)	Not Applicable
Windshield Heater System	2-4.6.e a)	Not Applicable

2-4.f Inspection

Since the Operator's Cab consists of separate items, the Inspection is described in the para(s) related to each item, as shown in Table 2-4.4.

Table 2-4.4 Operator's Cab Components - Inspection

COMPONENTS	REFERENCE (Para)
Operator's Seat	2-4.1.f
Windshield Wiper	2-4.2.f
External Rear View Mirrors	2-4.3.1.f
Inner Rear-View Mirrors	2-4.3.2.f
Cab Dividing Wall	2-4.4.f
Cab Console and panels	2-4.5.f
Windshield Heater System	2-4.6.f

2-4.g Repair

Since the Operator's Cab consists of separate items, the Repair is described in the para(s) related to each item, as shown in Table 2-4.5.

Table 2-4.5 Operator's Cab Components - Repair

COMPONENTS	REFERENCE (Para)
Operator's Seat	2-4.1.g
Windshield Wiper	2-4.2.g
External Rear View Mirrors	2-4.3.1.g
Inner Rear-View Mirrors	2-4.3.2.g
Cab Dividing Wall	2-4.4.g
Cab Console and panels	2-4.5.d
Windshield Heater System	2-4.6.g

2-4.h Reassembly

Since the Operator's Cab consists of separate items, the Reassembly is described in the para(s) related to each item, as shown in Table 2-4.6.

Table 2-4.6 Operator's Cab Components - Reassembly

COMPONENTS	REFERENCE (Para)
Operator's Seat	2-4.1.h
Windshield Wiper	2-4.2.h
External Rear View Mirrors	2-4.3.1.h
Inner Rear-View Mirrors	2-4.3.2.h
Cab Dividing Wall	2-4.4.h
Cab Console and panels	2-4.5.h
Windshield Heater System	2-4.6.h

2-4.i Adjustment/Test

Since the Operator's Cab consists of separate items, the Adjustment/Test is described in the para(s) related to each item, as shown in Table 2-4.7.

Table 2-4.7 Operator's Cab Components - Adjustment/Test

COMPONENTS	ADJUSTMENT	TEST
Operator's Seat	Not Applicable	Not Applicable
Windshield Wiper	Not Applicable	2-4.2.e b)
External Rear View Mirrors	Not Applicable	Not Applicable
Inner Rear-View Mirrors	Not Applicable	Not Applicable
Cab Dividing Wall	2-4.4.i a)	Not Applicable
Cab Console and panels	Not Applicable	Not Applicable
Windshield Heater System	Not Applicable	Not Applicable

2-4.1 Operator's Seat

2-4.1.a Description and Theory of Operation

The Operator' Seat (Refer to Figure 2-4.2) consists of a pedestal style seat assembly that is fully adjustable in the forward, backward and up and down position. To accomplish the various position adjustments, follow the adjustment settings described below:

a) Horizontal adjustment lever. This lever is located just under the cushion at the right side, and allows the horizontal adjustment (6 in.) (backward and forward position). Pull back and forth for adjustment.

b) Vertical adjustment pedal. This pedal is located on the pedestal lower part, and allows height adjustment (4 in.). Push down for adjustment.

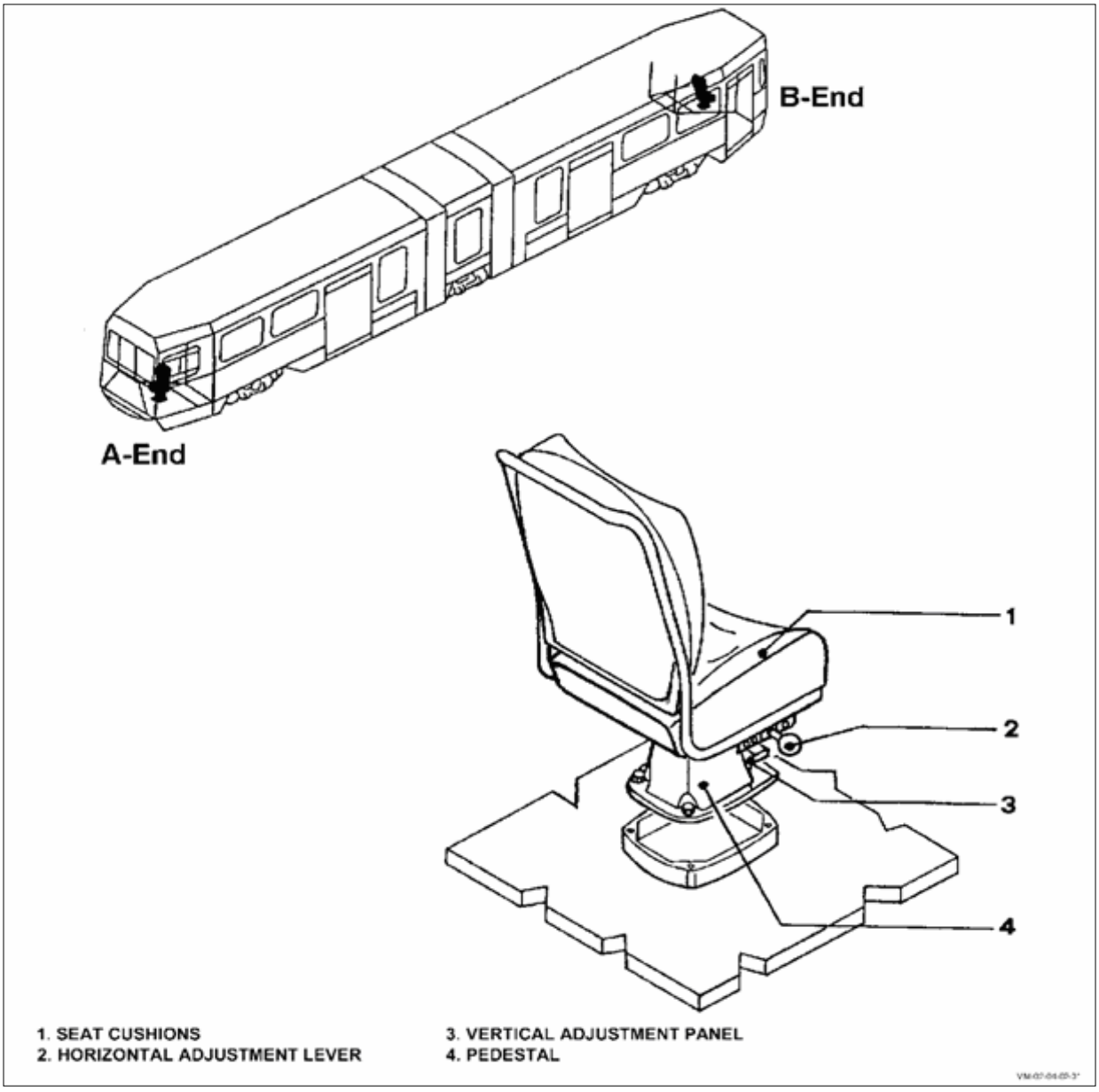


Figure 2-4.2 Operator's Seat

2-4.1.b Specific Safety Precautions (Not Applicable)

2-4.1.c Fault Isolation/Repair

For Operator's Seat Fault Isolation, refer to Table 2-4.8.

Table 2-4.8 Operator's Seat - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Seat is not properly fitted.	1. Attaching parts loose.	1. Fasten.
	2. Damage to the adjustment devices.	1. Lubricate.
2. Seat does not operate properly.	1. Fault in adjustment devices.	2. Replace. Refer to para 2-4.1.d.
3. Back cushion and/or soft seat damaged.	1. Heavy stress.	1. Replace.Refer to para 2-4.1.d.

2-4.1.d Disassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Operator's Seat, proceed as follows (Refer to Figure 2-4.3):
  1. Remove bolts (3) and washers (4, 5).
  2. Remove operator's seat (1).
  3. Remove spacer (2).

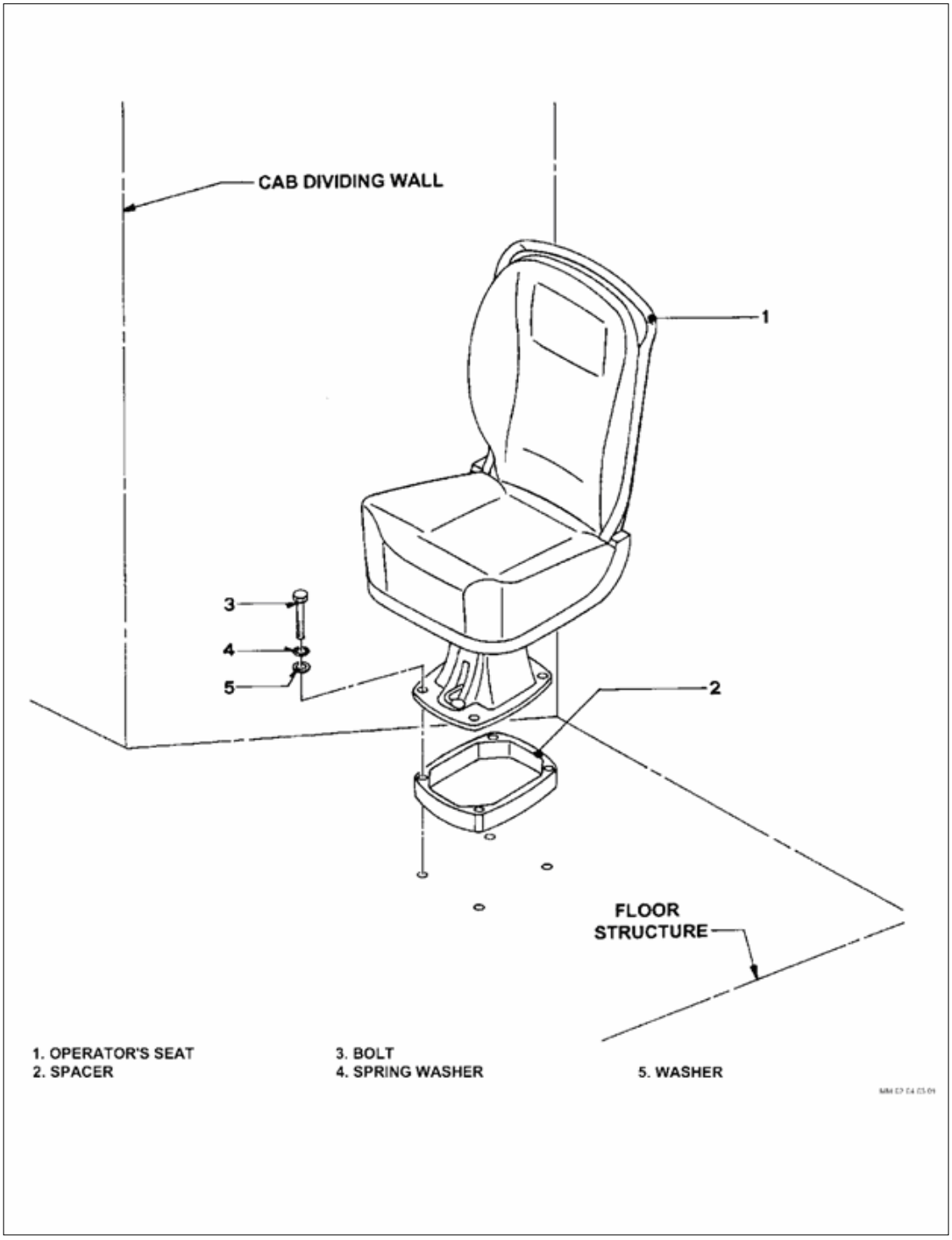


Figure 2-4.3 Operator's Seat - Removal

2-4.1.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Operator's Seat, proceed as follows:

  1. Clean the Operator's Seat using mild detergent diluted in water; rinse with water and dry with cleaning rags.

b) Painting (Not Applicable)

2-4.1.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Operator's Seat, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect back cushion and soft seat for scratch or otherwise damages.
  3. Inspect pedestal, lever and pedal for dents, cracks or otherwise damages.
  4. Inspect seat for correct installation and operation.
  5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.1.g Repair

Back cushions and soft seat repair is not applicable.

Pedestal/frame not seriously damaged can be repaired using standard tools, as for standard workshop practices.

2-4.1.h Reassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Operator's Seat, proceed as follows (Refer to Figure 2-4.4):

  1. Clean operator's seat installation area.
  2. Position the spacer (2).
  3. Position the seat (1).
  4. Install bolts (3) and washers (4, 5).
  5. Tighten the bolts (3) to **24 lb-ft (32.5 Nm)**.

  Horizontal adjustment lever. This lever is located just under the cushion at the right side, and allows the horizontal adjustment (6 in.) (backward and forward position). Pull back and forth for adjustment

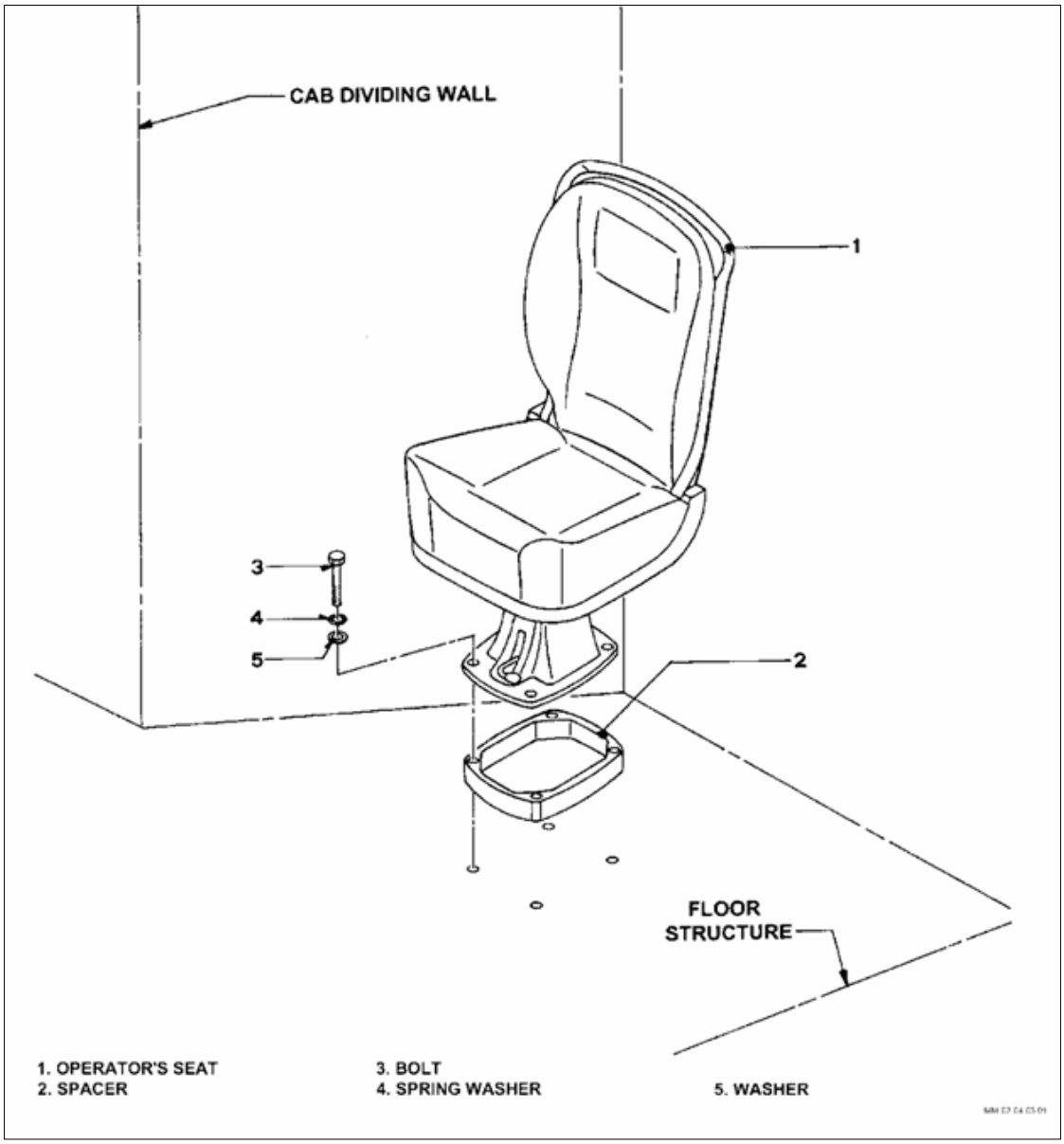


Figure 2-4.4 Operator's Seat - Installation

2-4.1.i Adjustment/Test (Not Applicable)

2-4.2 Windshield Wiper

2-4.2.a Description and Theory of Operation

The vehicle is equipped with two Windshield Wipers and Wash Systems (Refer to Figure 2-4.5), one for each windshield.

a) Windshield Wiper System. Each Windshield Wiper system consists of:

- Motor Unit, Wiper Control Unit, Wiper Arm, Blade and WIPER Switch.
- The Motor Unit (operating at 37.5 VDC) consist of the motor assembly, provided with radio suppressor device, and the gear box.
- The Wiper Control Unit, located near the motor unit, controls the wiper speed asselected by the Operator.
- The Wiper Arm, connected to the gear box, consist of two parallel arms having the function of keeping the blade in vertical position during the operation.
- The Blade (31.5 in. length) can be replaced without removing the wiper arm.
- The system is a self parking type and operates in three different modes: Delay, Low Speed and High Speed as controlled by the WIPER switch.
- The WIPER Switch (Refer to Figure 2-4.6), located on the Operator Console RH side, has four positions: OFF, DELAY, LOW and HIGH.
- Delay is also regulated through the DELAY regulator located next the WIPER switch.

b) Wiper Wash System. The Wiper Wash System (Refer to Figure 2-4.5) consists of:

- Tank, Electric Pump, WASH Pushbutton, Piping, Washer Nozzles and Fill-Up Door Assy.
- The Tank, located near the front passenger doors contains 2.7 gal of washer fluid and can be replenished from Service Filler. The tank is also provided with glass gauge to check the washer fluid level.
- The Electric Pump (operating at 37.5 VDC) is located next to the tank. The electric pump has the function to suck the washer fluid from the tank and deliver it through pipings to the washer nozzles (located on the wiper arm) so that the washer fluid is sprayed on to the windshield as controlled through the WASH Pushbutton (Refer to Figure 2-4.6).
- The Fill-Up Door is made of a door with lock hinged on the inner lining panel near the front passenger door.

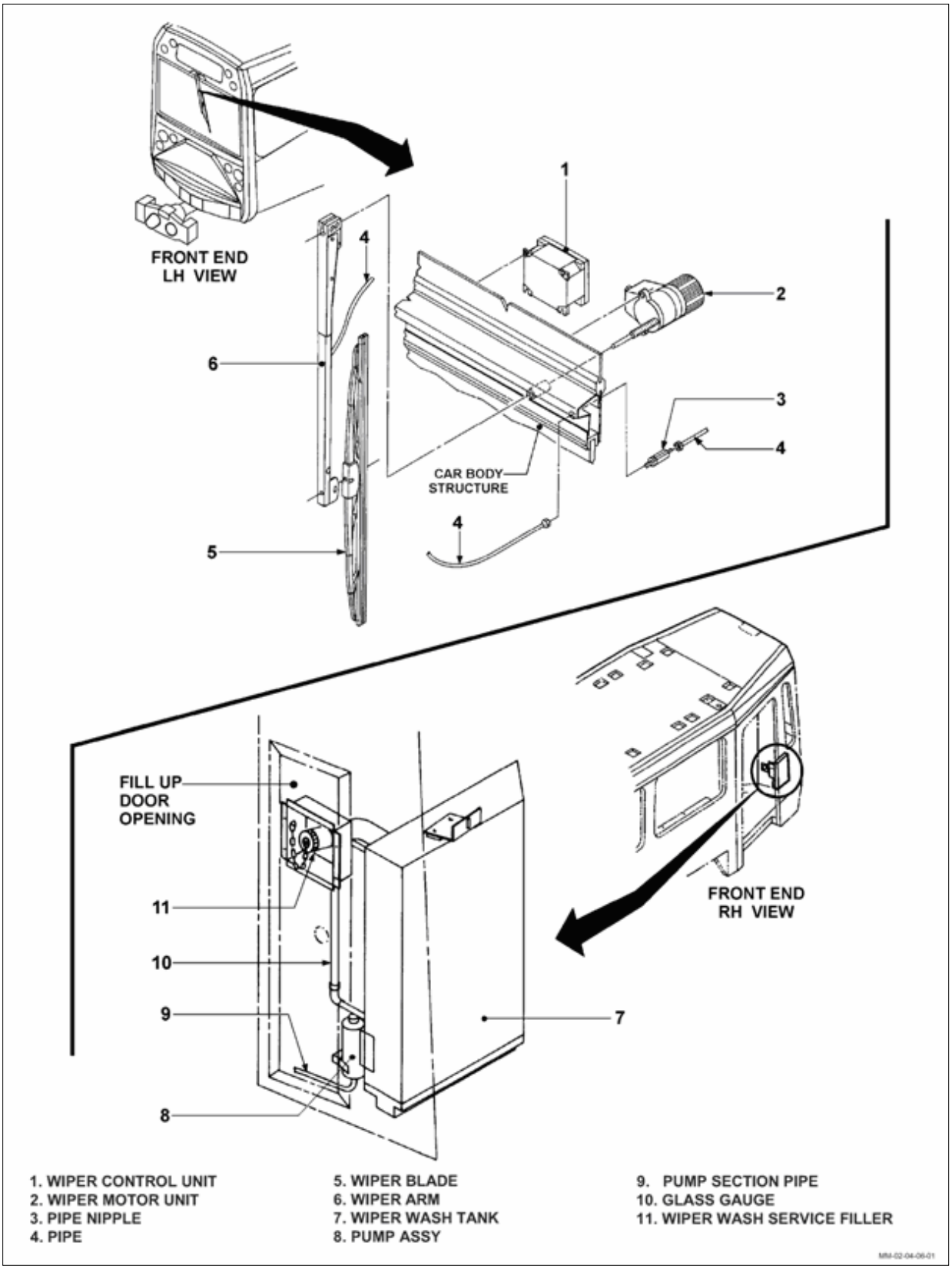


Figure 2-4.5 Windshield Wiper and Wash System – Components

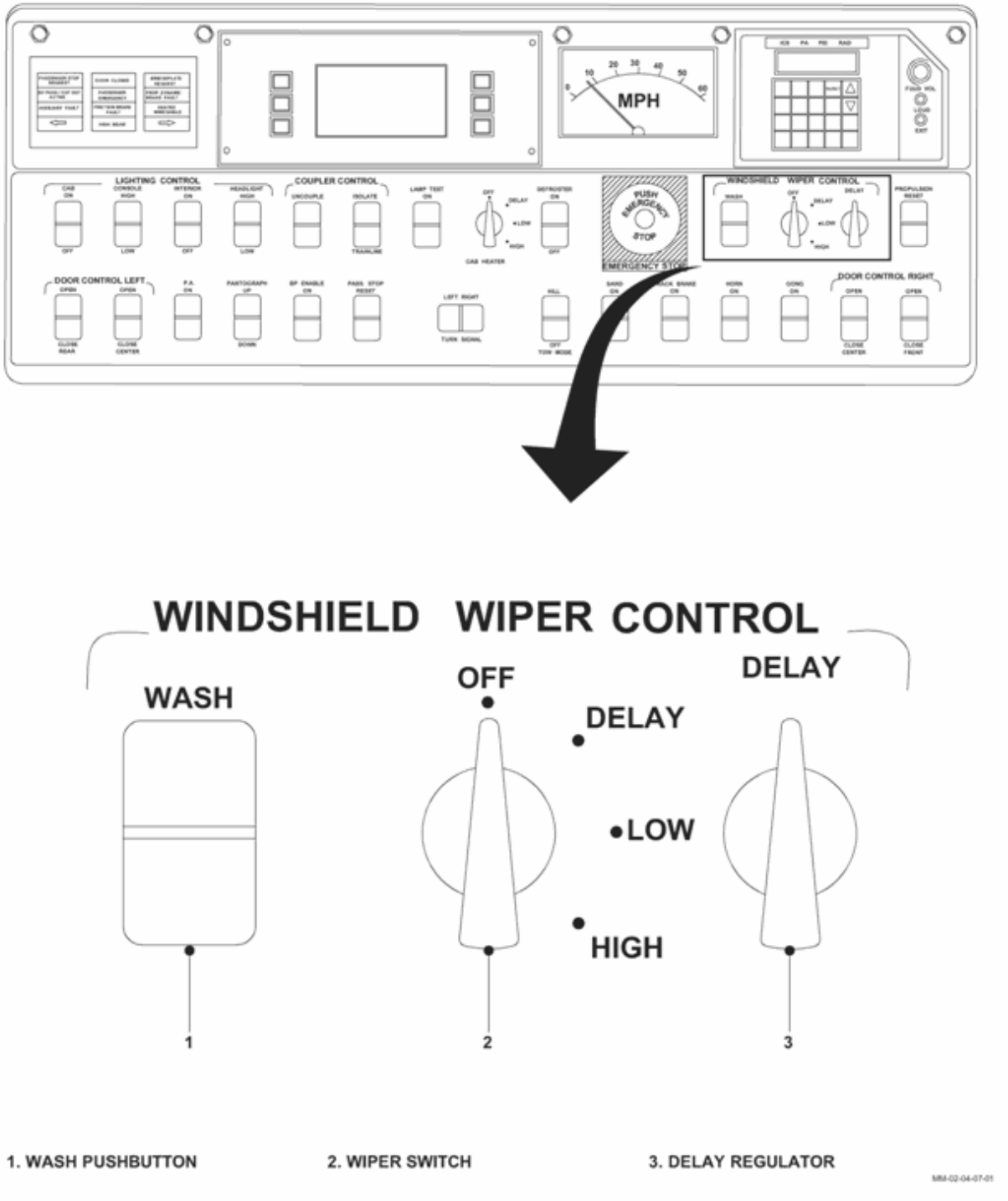


Figure 2-4.6 Windshield Wiper and Wash System - Controls

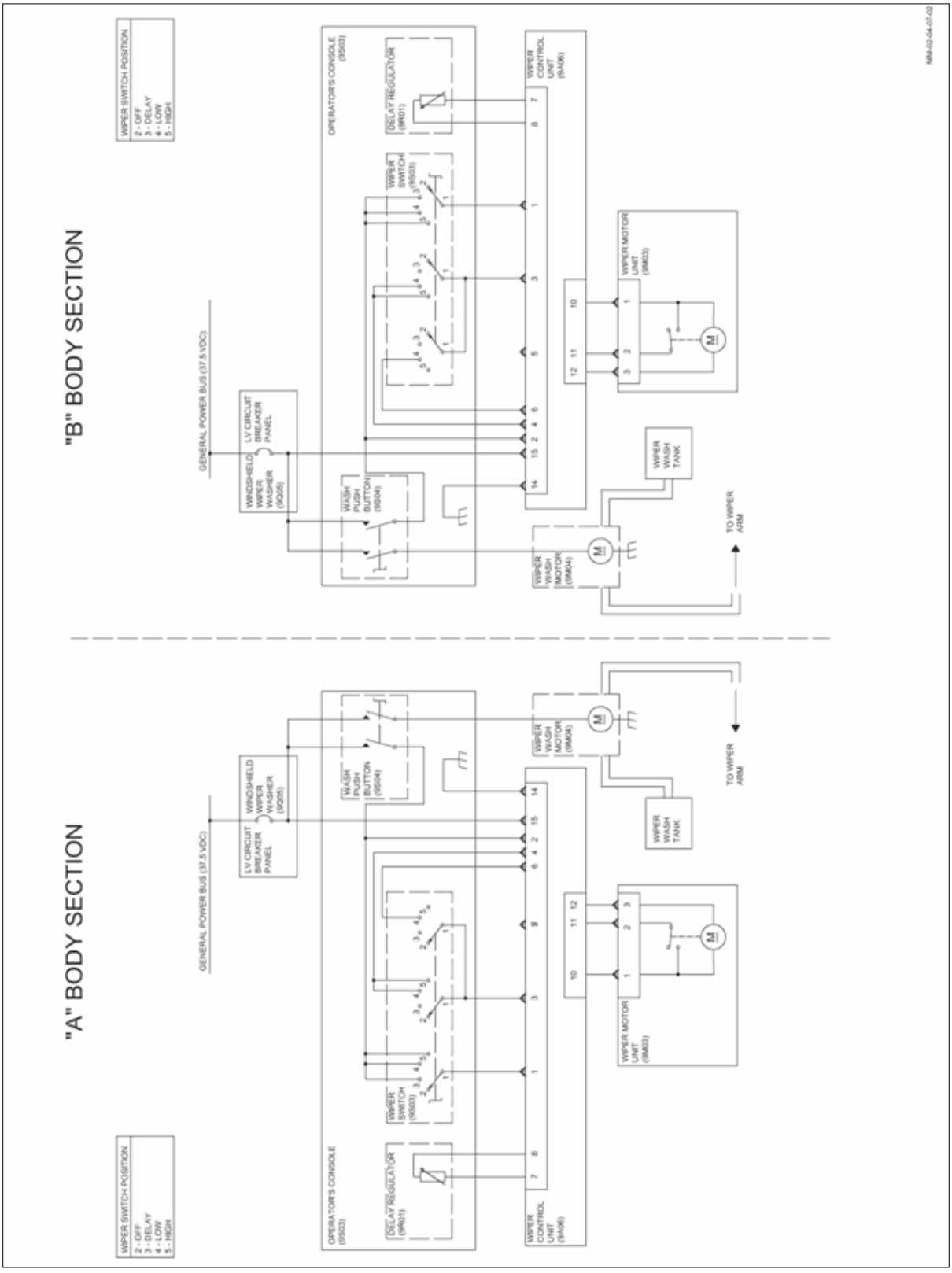


Figure 2-4.7 Windshield Wiper and Wash System - Electrical Schematic

2-4.2.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORMING WINDSHIELD WIPER AND WASH SYSTEM COMPONENTS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
> **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-4.2.c Fault Isolation

For Windshield Wiper System Fault Isolation, refer to Table 2-4.9.
For Wiper Wash System Fault Isolation, refer to Table 2-4.10.

Table 2-4.9 Windshield Wiper System - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. The windshield wiper system does not operate.	1. WINDSHIELD WIPER WASHER (Circuit Breaker Panel) is open.	1. Close CB 9Q05
	2. Wiper Motor Unit faulty.	1. Replace Wiper Motor Unit. (Refer to para 2-4.2.d a)).
	3. Wiper Control Unit.	1. Replace Wiper Control. (Refer to para 2-4.2.d).
	4. WIPER Switch defective.	1. Replace Wiper Switch. Refer to para 2-4.2.d).
	5. Fault in the electrical system.	1. Inspect Electrical System for continuity.

Table 2-4.10 Wiper Wash System - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. With WASH Pushbutton held the system does not operate.	1. WINDSHIELD WIPER WASHER (Circuit Breaker Panel) is open.	1. Close CB 9Q05.
	2. Wiper Wash tank empty.	1. Refill tank with washer fluid.
	3. Wiper Wash Pump faulty.	1. Replace Wiper Wash Tank. (Refer to para 2-4.2.d).
	4. WASH Pushbutton faulty.	1. Replace WASH Pushbutton. Refer to para 2-4.2.d).
	5. Fault in the electrical system.	1. Inspect Electrical System for continuity.
2. Fill-up door assy damaged.	1. Vandalism	1. Replace. Refer to para 2-4.2.d g).

2-4.2.d Disassembly

The Windshield Wiper Removal procedures consist in the following main operations:

- Windshield Wiper Motor Unit Removal.
- Windshield Wiper Control Unit Removal.
- WIPER Switch Removal.
- Wiper Blade Removal.
- Wiper Wash Tank Removal.
- Wiper Wash Pump Removal.
- Fill-Up Door Assy Removal.
- WASH Pushbutton Removal.
- Pipes Removal.

a) Windshield Wiper Motor Unit Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Windshield Wiper Motor Unit, proceed as follows (Refer to Figure 2-4.8):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove the Front End Upper panel (Refer to para 2-2.6.d c)).
  3. Remove the inner upper side Shell.
  4. Remove wiper wash piping (6) from car body structure.
  5. Remove wiper arm (5) from motor unit by loosening the related attaching parts.
  6. Disconnect electrical connector (13) from motor unit (4).
  7. From the inner side of the vehicle, remove the screws (1), the washers (2, 3) and the motor unit (4).

b) Windshield Wiper Control Unit Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Windshield Wiper Motor Control Unit, proceed as follows (Refer to Figure 2-4.8):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove the inner upper side Shell.
  3. Locate Windshield Wiper Control Unit (8).
  4. Remove electrical connector (12) from control unit.
  5. Remove screws (9) and washers (10, 11).
  6. Remove Control Unit (8).

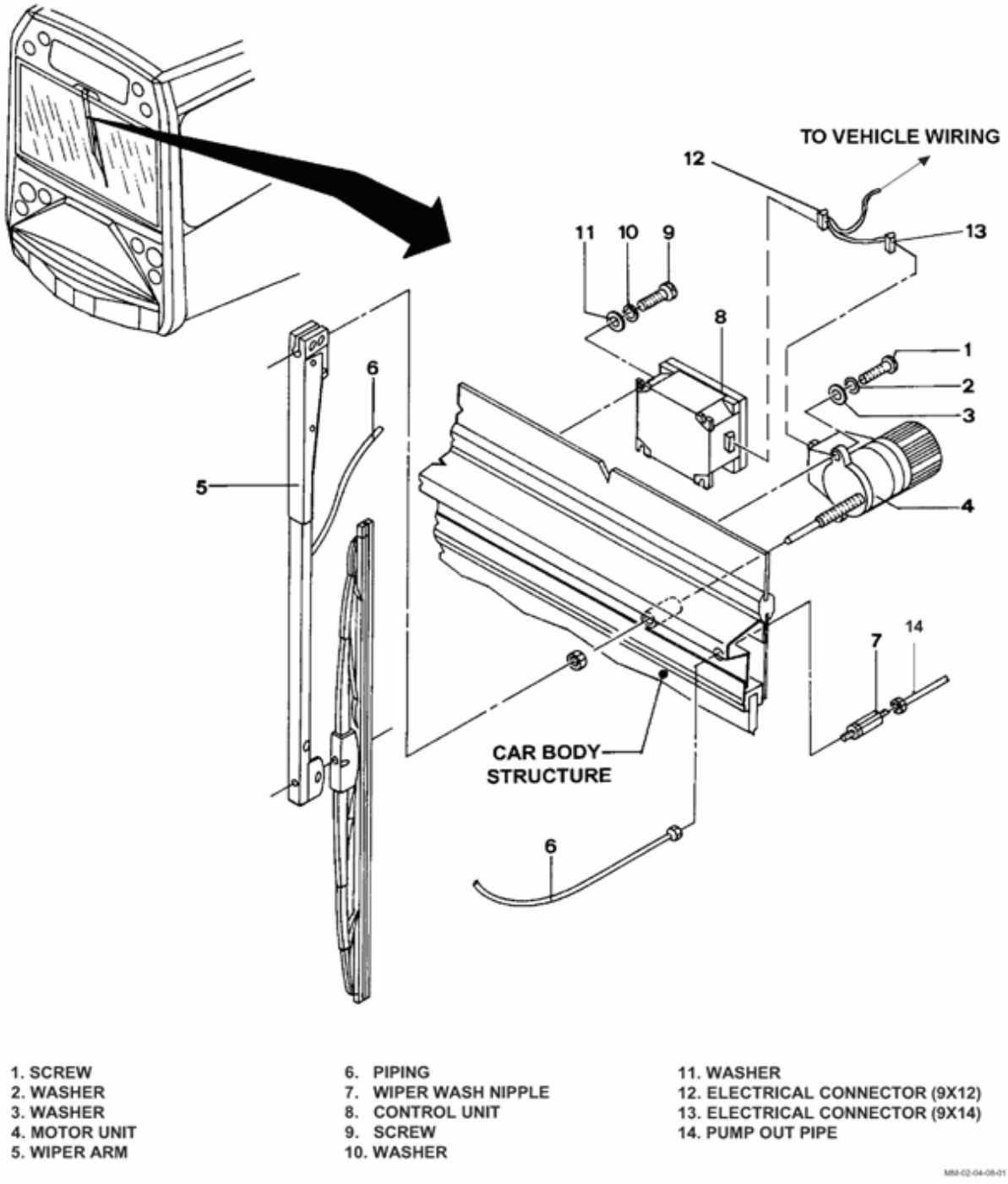


Figure 2-4.8 Windshield Wiper System Components - Removal

c) WIPER Switch Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove WIPER Switch, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove the console attaching parts in order to gain access to the Wiper Switch and disconnect it from electrical plant. Make note of the wire codes or refer to Section 7.
  3. Remove the WIPER Switch attaching parts and remove it.

d) Wiper Blade Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Wiper Blade, proceed as follows:

  1. Remove Wiper Blade attaching parts.
  2. Remove wiper blade from wiper arm.

e) Wiper Wash Tank Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material.
     - Hose (1/4 in. – inner DIA; length 4 ft).
     - Tank (3 gals minimum capacity).

- **Procedure.**

  To Remove Wiper Wash Tank, proceed as follows (Refer to Figure 2-4.9):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using Maintenance Key open the fill up door (3) to gain access to the wiper wash tank.
  3. Remove Screws (4) to loose the Water Filter Assy (5) from the Cab Wall Side (1).
  4. Remove Fixed Panel of the cab Wall (Refer to para 2-4.4.d i)).
  5. Remove the Water Filter Assy by loosen the hose clamp (7).
  6. Remove both the screws (8) and take care of the upper tank support (9).
  7. Disconnect Pump power supply connectors (14) from Pump Assy.
  8. Empty by Gravity the Tank (10) as follows:
     a. Position the container (3 gals min capacity) below the floor level (on the Door Step or on the ground).
     b. Disconnect Pump IN pipe (12) from Tank OUT pipe and connect the hose (1/4 in. inner DIA, length 4 ft) to Tank OUT pipe in order to address the wiper wash tank water in the container.
  9. Disconnect pump OUT pipe (12A) from pump assy (13).
  10. Remove the Pump Assy (13) from Tank (10) by removing the screws (15).
  11. Apply plastic protective caps on the free end of the Pump IN/OUT Pipes (12, 12 A).
  12. Lift up and remove the tank (10) from Lower support (11).

f) Wiper Wash Pump Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Wiper Wash Pump, proceed as follows (Refer to Figure 2-4.9):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.

2. Using Maintenance Key open the Fill Up Door (3) to gain access to the Pump Assy (13).
3. Disconnect Pump Power Supply Connector (14) from Pump Assy (13).
4. Empty by Gravity the Tank (10) as follows:
   a. Position the container (3 gals min capacity) below the floor level (on the Door Step or on the ground).
   b. Disconnect Pump IN pipe (12) from Tank OUT pipe and connect the hose (1/4 in. ineer DIA, length 4 ft) to Tank OUT pipe in order to address the wiper wash tank water in the container.
5. Disconnect pump OUT pipe (12A) from pump assy (13).
6. Remove the Pump Assy (13) from Tank (10) by removing the screws (15).
7. Apply plastic protective caps on the free end of the Pump IN/OUT pipe (12, 12A).
8. Remove the console attaching parts in order to gain access to the Wiper Switch and disconnect it from electrical plant. Make note of the wire codes or refer to Section 7.

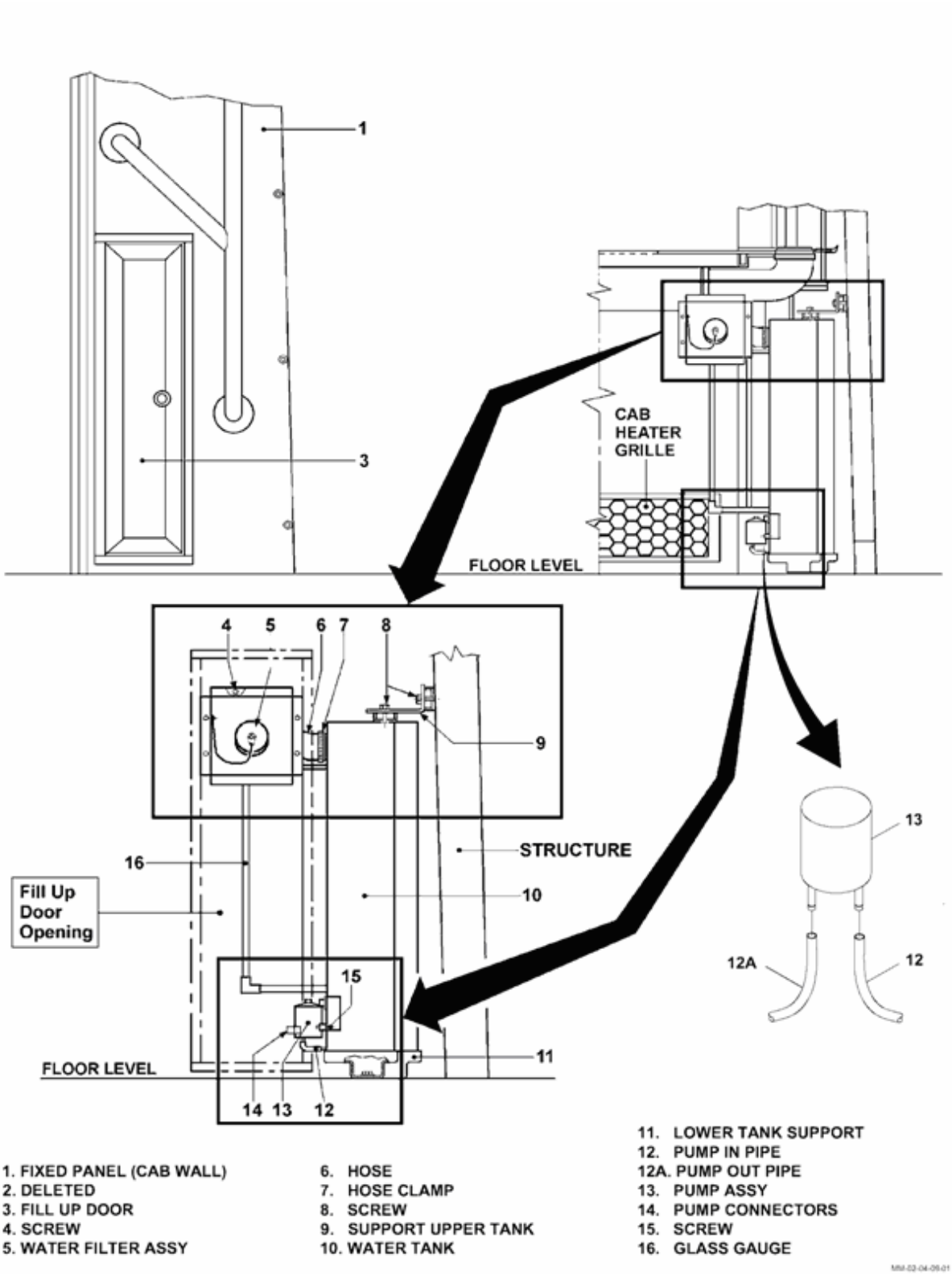


Figure 2-4.9 Wiper Wash System Components - Removal

g) Fill-Up Door Assy Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Fill-Up Door Assy, proceed as follows (Refer to Figure 2-4.10):

  1. Using Maintenance Key open Fill-Up Door Assy (3).
  2. Drill rivets (1) using standard tools as for standard workshop practices.
  3. Remove door assy (3) with hinge (2) and door lock (5).
  4. Check the hinge (2) and, if damaged, remove it by drilling the related rivets (4) using standard tools as for standard workshop practices.

h) WASH Pushbutton Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove WASH Pushbutton, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove the console attaching parts in order to gain access to the WASH Pushbutton and disconnect it from electrical plant.
  3. Remove the WASH pushbutton attaching parts and remove it.

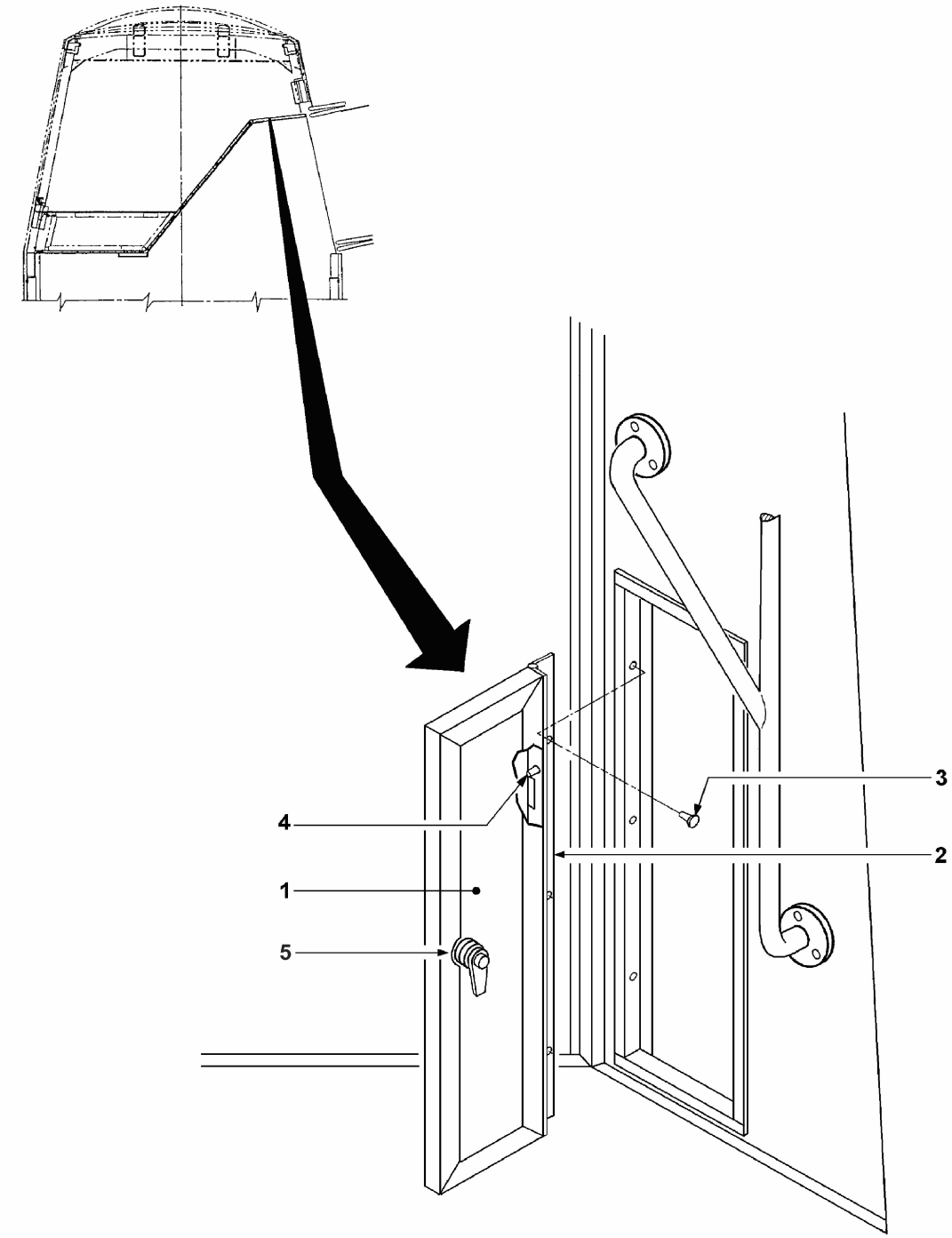


Figure 2-4.10 Fill-Up Door Assy - Removal

i) Pipes Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material.
     - Tank (3 gals minimum capacity).
     - Hose (1/4 in. – inner DIA; length 4 ft).

- **Procedure.**

  To Remove Pipe / Hose, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Using Maintenance Key open the fill up door (3, refer to Figure 2-4.9) to gain access to the wiper wash tank.
  3. Empty by Gravity the Tank (10) as follows:
     a. Position the container (3 gals min capacity) below the floor level (on the Door Step or on the ground).
     b. Disconnect Pump IN pipe (12) from Tank OUT pipe and connect the hose (1/4 in. inner DIA, length 4 ft) to Tank OUT pipe in order to address the wiper wash tank water in the container.
  4. Apply plastic protective caps on the free end of the Pump IN/OUT Pipes (12).
  5. Remove wiper wash piping (6, refer to Figure 2-4.8) from car body structure as follows:
     a. Disconnect piping (6) from wiper wash nipple (7).
     b. Disconnect piping (6) from wiper arm (5) nipple.
  6. Remove wiper wash pipe (item 14, refer to Figure 2-4.8 and item 12A, refer to Figure 2-4.9) from car body structure as follows:
     a. Disconnect pipe (14) from wiper wash nipple (7).
     b. Disconnect pipe (12A) from wiper wash pump nipple.
     c. Draw pipe from vehicle.

2-4.2.e Cleaning/Painting

a) Windshield Wiper Blade Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean each Windshield Wiper Blade, proceed as follows:

  1. Clean the Windshield Wiper arm and blade using neutral detergent diluted in water.

b) Painting (Not Applicable)

2-4.2.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure (Windshield Wiper System Components).**

  To Inspect Windshield Wiper System Components, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect wiper blade for damage. As necessary, replace the blade. Refer to para 2-4.2.f).
  3. Inspect tank, hoses and water connections for leaks.
  4. Inspect other windshield wiper components for damage and correct installation.
  5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

- **Procedure (Wiper Wash System Components).**

  To Inspect Wiper Wash System Components, proceed as follows:

  1. Inspect washer fluid fill-up door for damage.
  2. Inspect washer nozzles for damage/deformation.
  3. Inspect washer nozzles for correct installation.
  4. Inspect wiper wash tank for damage/deformations
  5. Inspect wiper wash tank for correct installation.
  6. Inspect wash tank and related hose for leaks.
  7. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.2.g Repair

Windshield Wiper and/or Wiper Wash System faulty components should be replaced. Repair is not recommended.

2-4.2.h Reassembly

The Windshield Wiper Installation procedures consist in the following main operations:

- Windshield Wiper Motor Unit Installation.
- Windshield Wiper Control Unit Installation.
- WIPER Switch Installation.
- Wiper Blade Installation.
- Wiper Wash Tank Installation.
- Wiper Wash Pump Installation.
- Fill-Up Door Assy Installation.
- WASH Pushbutton Installation.
- Pipes Installation.

a) Windshield Wiper Motor Unit Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Windshield Wiper Motor Unit, proceed as follows (Refer to Figure 2-4.11):
  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Place the motor unit (4) in position.
  3. Install locking screws (1) and washers (2, 3).
  4. Tighten screws (1) to **14 lb-ft (19 Nm)**.
  5. Plug in the electrical connector (13) to motor unit.
  6. Connect the piping (6) to the nipple (7).
  7. Install wiper arm (5) by locking the related attaching parts.
  8. Install the Front End Lower Panel (refer to para 2-2.6.d c)).
  9. Install the Front End Upper Panel (refer to para 2-2.6.d c)).
  10. Install the inner upper side Shell.
  11. Perform Windshield Wiper System Test. (Refer to para i)).

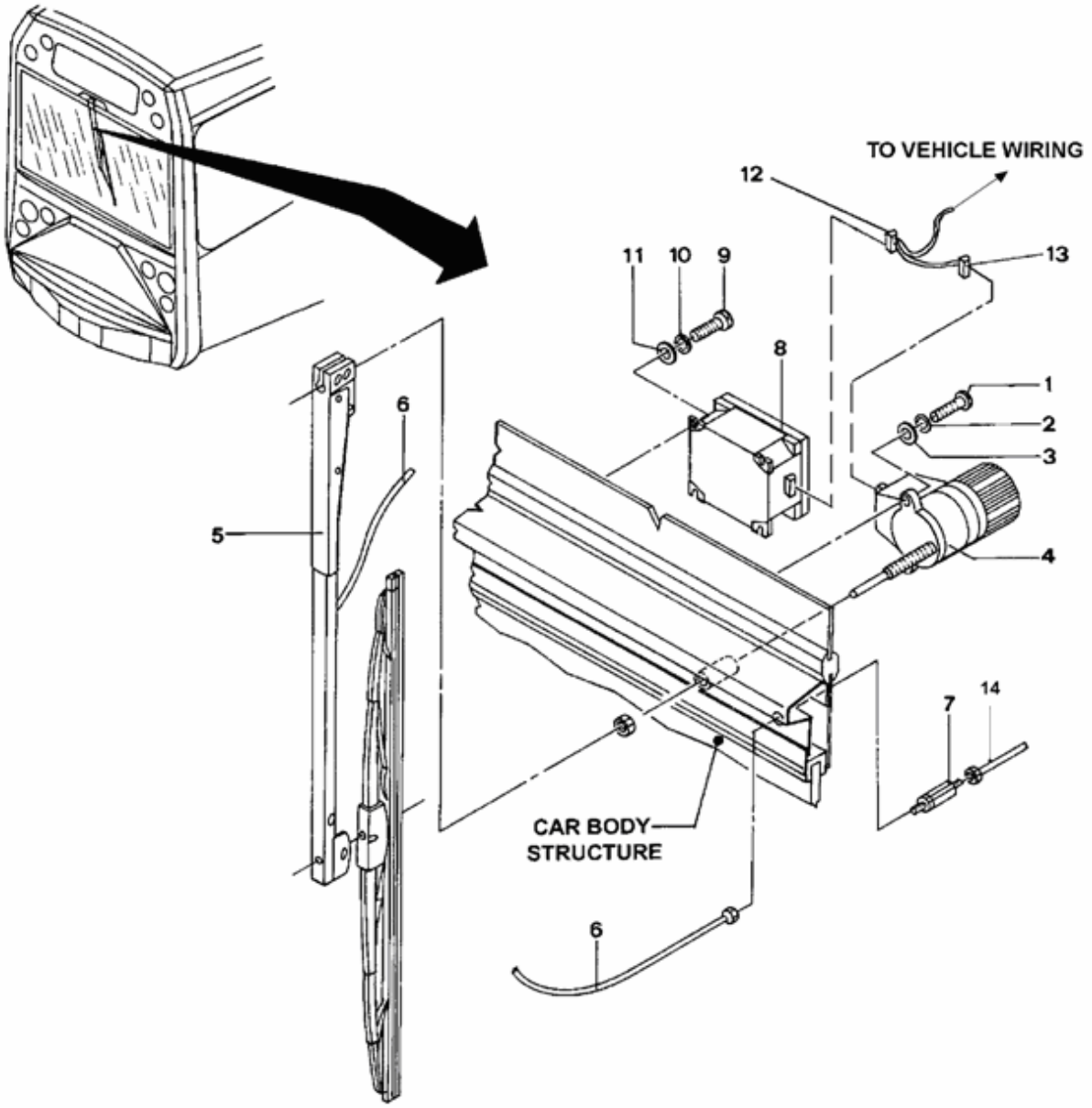
b) Windshield Wiper Control Unit Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

To Install Windshield Wiper Motor Control Unit, proceed as follows (Refer to Figure 2-4.11):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Locate the windshield wiper control unit support.
3. Position Control Unit and install the screws (9) and washers (10, 11).

4. Tighten screws (9) to **7 lb-ft (9.5 Nm)**.
5. Plug in connector (12) to the Control Unit.
6. Perform Windshield Wiper System Test. (Refer to para i))



1. SCREW
2. WASHER
3. WASHER
4. MOTOR UNIT
5. WIPER ARM
6. PIPING
7. WIPER WASH NIPPLE
8. CONTROL UNIT
9. SCREW
10. WASHER
11. WASHER
12. ELECTRICAL CONNECTOR (9X12)
13. ELECTRICAL CONNECTOR (9X14)
14. PUMP OUT PIPE

Figure 2-4.11 Windshield Wiper System Components - Installation

c) WIPER Switch Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install WIPER Switch, proceed as follows:
  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position the switch and install the attaching parts to secure it to the console.
  3. Connect electrical wires to the switch. Refer to DWG R12400200 sheet 110 for wires connection.
  4. Restore console in position.
  5. Install and tighten console attaching parts.
  6. Perform Windshield Wiper System Test (Refer to para i)).

d) Wiper Blade Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Wiper Blade, proceed as follows:
  1. Position wiper blade on the wiper arm.
  2. Install and tighten the related attaching parts.

e) Wiper Wash Tank Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Wiper Wash Tank, proceed as follows (Refer to Figure 2-4.12):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position the Pump Assy (13) on the Water Tank (10) and fix it by the screws (15). Tighten to **7 lb-ft (9.5 Nm)**.
  3. Position the Water Tank (with Pumps) on the Lower Tank Support (11) and fix it by installing the Upper Tank Support (9) with both screws (8).
  4. Tighten the screws (8) to **7 lb-ft (9.5 Nm)**.
  5. Install the Water filler Assy (5) onto the Tank and fix the Hose by Hose Clamp (7).
  6. Reconnect Pump power supply Connectors (14) to the Pump Assy.
  7. Remove plastic protective cap from the free end of the Pump IN/OUT Pipes (12, 12A) and then reconnect them to the Pump (13).
  8. Fill up the Tank with 1 gallon max of water through the Water Filler Assy (5) and check for leakage and proper installation. Check water level through the glass gauge (16).
  9. Reinstate Electrical power On and perform Wiper Wash System Test (Refer to para i)).
  10. Position the Cab Wall Assy in place and fix the Water Filler Assy (5) through the screws (4).
  11. Install Fixed panel of the Cab Wall (Refer to para 2-3.3.d).
  12. Complete the Filling up of the tank to full.
  13. Using Maintenance Key close the fill up door (3).
  14. Record installation result onto Defect Report Card to allow the planning of the Maintenance Operations.

f) Wiper Wash Pump Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Wiper Wash Pump, proceed as follows (Refer to Figure 2-4.12):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

2. Position the Pump Assy (13) on the Water Tank (10).
3. Install screws (15) and tighten to **7 lb-ft (9.5 Nm)**.
4. Remove plastic protective caps from the free end of the Pump IN/OUT Pipe (12, 12A) and then reconnect them to the Pump (13).
5. Reconnect Pump Power Supply connectors (14) to the Pump Assy (13).
6. Fill up the Tank with 1 gallon max of water and check for leakage and proper pipe installation.
7. Perform Wiper Wash System Test (Refer to para i)).
8. Once the Test is positively completed fill up to full the Tank.
9. Record installation result onto Defect Report Card to allow the planning of the Maintenance Operations.
10. Position the Cab Wall Assy in place and fix the Water Filler Assy (5) through the screws (4).
11. Using Maintenance Key close the fill up door (3).

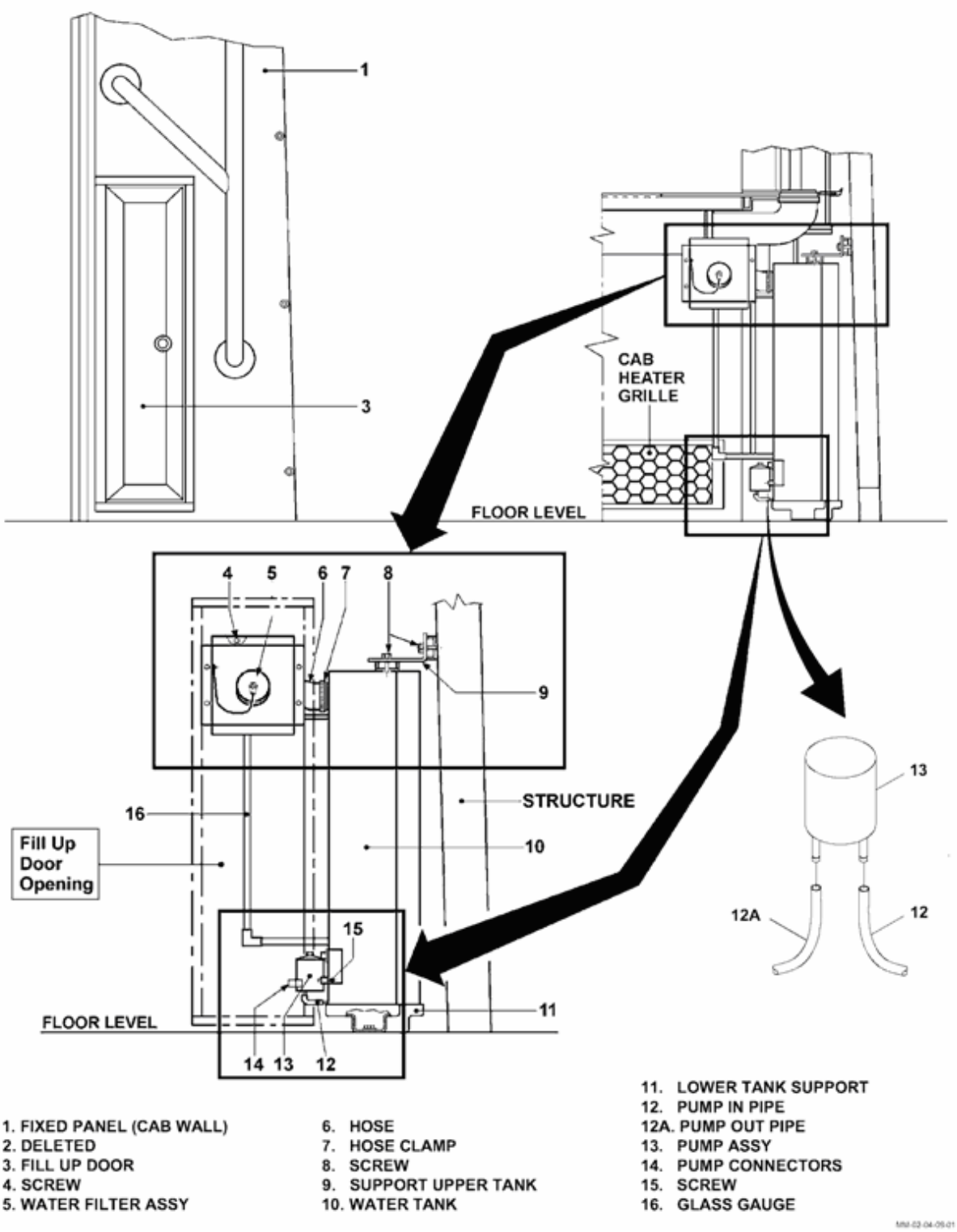


Figure 2-4.12 Wiper Wash System Components - Installation

g) Fill-Up Door Assy Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Fill-Up Door Assy, proceed as follows (Refer to Figure 2-4.13):
  1. If necessary, assembly the door assy with hinge (2) by installing rivets (4).
  2. Position the door assy (1).
  3. Install rivets (2).
  4. Check door and latch correct operation.
  5. Close Fill-Up Door and lock it using Maintenance Key.

h) WASH Pushbutton Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install WASH Pushbutton, proceed as follows:
  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position the pushbutton and install the attaching parts to secure it to the console.
  3. Connect electrical wires to the pushbutton. (Refer to DWG R12400200 sheet 110 for wires connections).
  4. Restore console in position.
  5. Install and tighten console attaching parts.
  6. Perform Wiper Wash System Test (Refer to para i)).

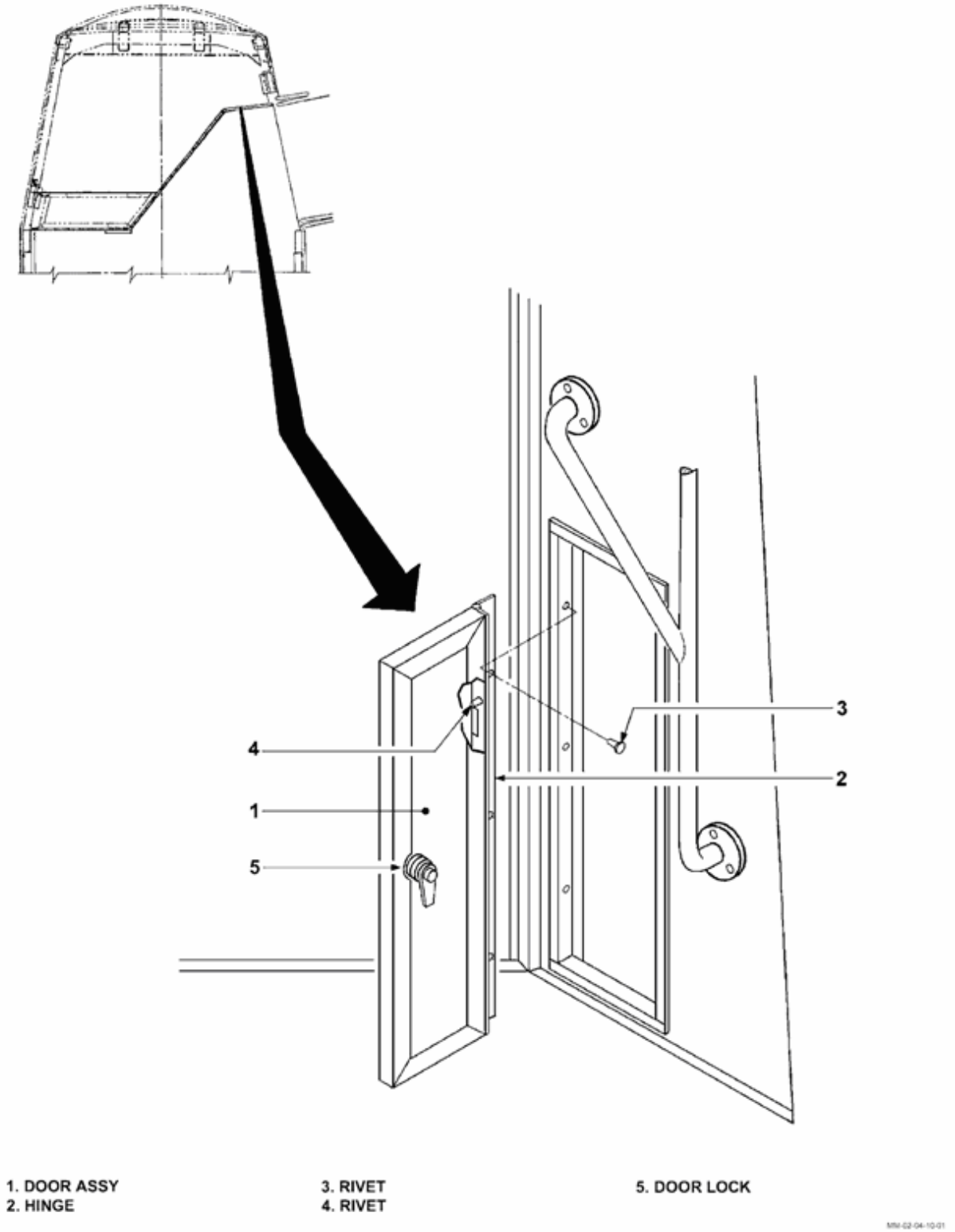


Figure 2-4.13 Fill-Up Door Assy - Installation

i) Pipes Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Pipes, proceed as follows:

  1. Check that the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Install wiper wash pipe (item 14, refer to Figure 2-4.11 and item 12A, refer to Figure 2-4.12) as follows:
     a. Insert pipe (12A, 14) in the related seat of the vehicle.
     b. Connect pipe (14) to the wiper wash nipple (7).
     c. Connect pipe (12A) to the wiper wash pump nipple.
  3. Install wiper wash piping (6, refer to Figure 2-4.11) to the car body structure as follows:
     a. Connect piping (6) to the wiper wash nipple (7).
     b. Connect piping (6) to the wiper arm (5) nipple.
  4. Remove plastic protective cap from the free end of the Pump IN/OUT Pipes (12, refer to Figure 2-4.12) and then reconnect them to the Pump (13).
  5. Fill up the Tank with 1 gallon max of water through the Water Filler Assy (5) and check for leakage and proper installation. Check water level through the glass gauge (16).
  6. Using Maintenance Key close the fill up door (3).
  7. Set WIPER Switch to "OFF" position.

2-4.2.i Adjustment/Test

a) Adjustment (Not Applicable)

b) Test

Windshield Wiper System

- **Reference Information.**
  1. Tools /Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Test Windshield Wiper System, proceed as follows:

  1. Set the vehicle in the following condition:
     a. Power the Windshield Wiper System (WINDSHIELD WIPER WASHER CB 9Q05).
  2. Sequentially set WIPER Switch to DELAY, LOW and HIGH position in order to check that the system operates properly, and the blade cleans the windshield area as shown in the Figure 2-4.14.
  3. Set WIPER Switch to "OFF" position.
  4. Verify correct resting position (Park Position) of Wiper Blade as shown in the Figure 2-4.14.

Wiper Wash System

- **Reference Information.**
  1. Tools /Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Test Wiper Wash System, proceed as follows:

  1. Set the vehicle in the following condition:
     a. Power the Wiper Wash System (WINDSHIELD WIPER WASHER CB 9Q05).
  2. Hold WASH Pushbutton in order to spray the washer fluid on the windshield.
  3. Check that WASH Pushbutton light turns on.
  4. Check that washer nozzles operate correctly.

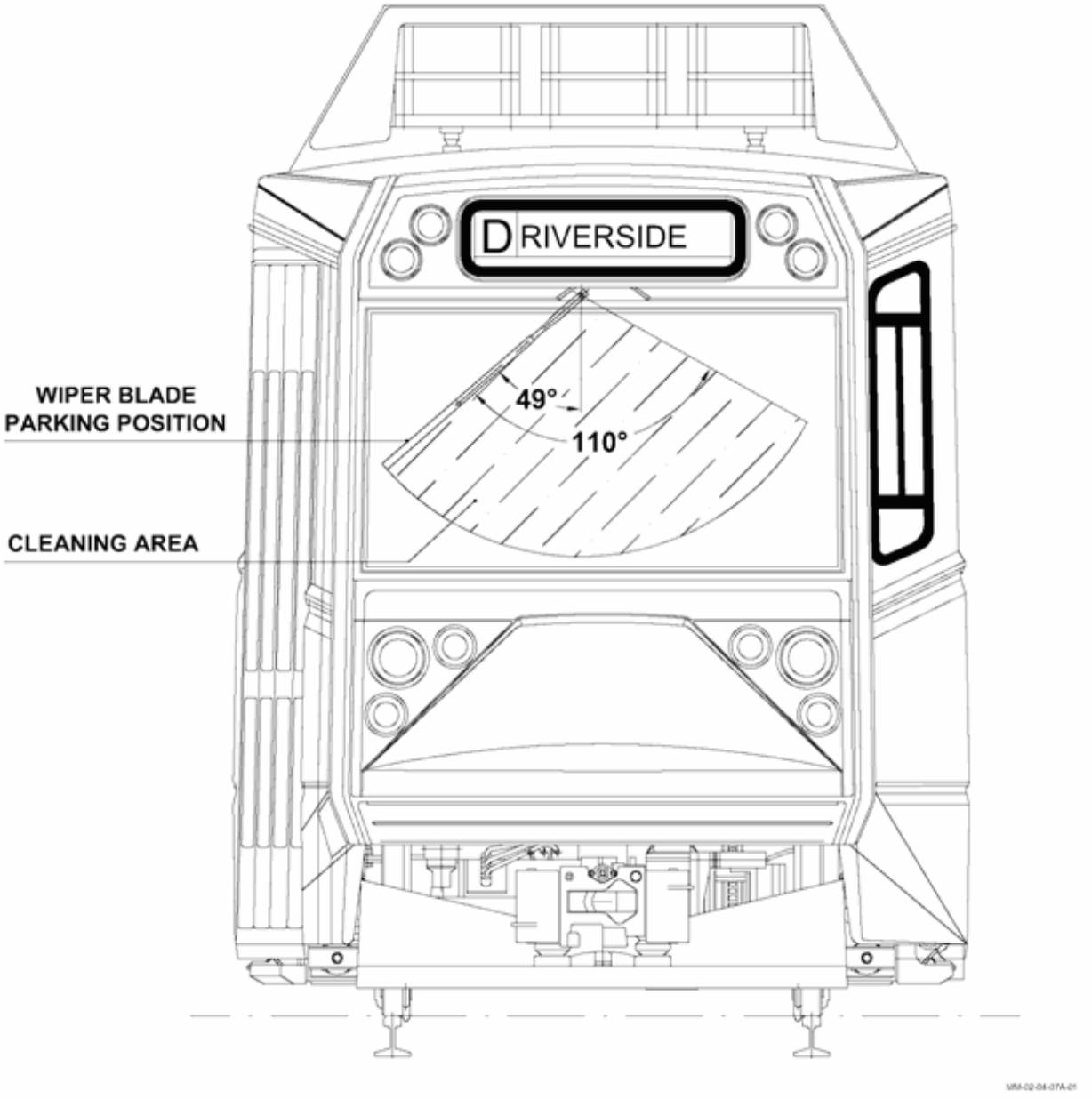


Figure 2-4.14 Windshield Wiper System – Test Position

2-4.3 Mirrors

2-4.3.1 External Rear-View Mirrors

2-4.3.1.a Description and Theory of Operation

Each vehicle's end is equipped with one External Rear-View Mirror (on RH passengers door) to assist the operator during the vehicle operations (Refer to Figure 2-4.15). The mirror adjustment is performed manually. The mirror enable the Operator to supervise the loading and unloading at all doorways of the vehicle, when the vehicle doors are open, and to verify that the last door on the longest train is clear of passengers. The mirror is distortion-free, whole angle view glass with durable and rear surface silvering.

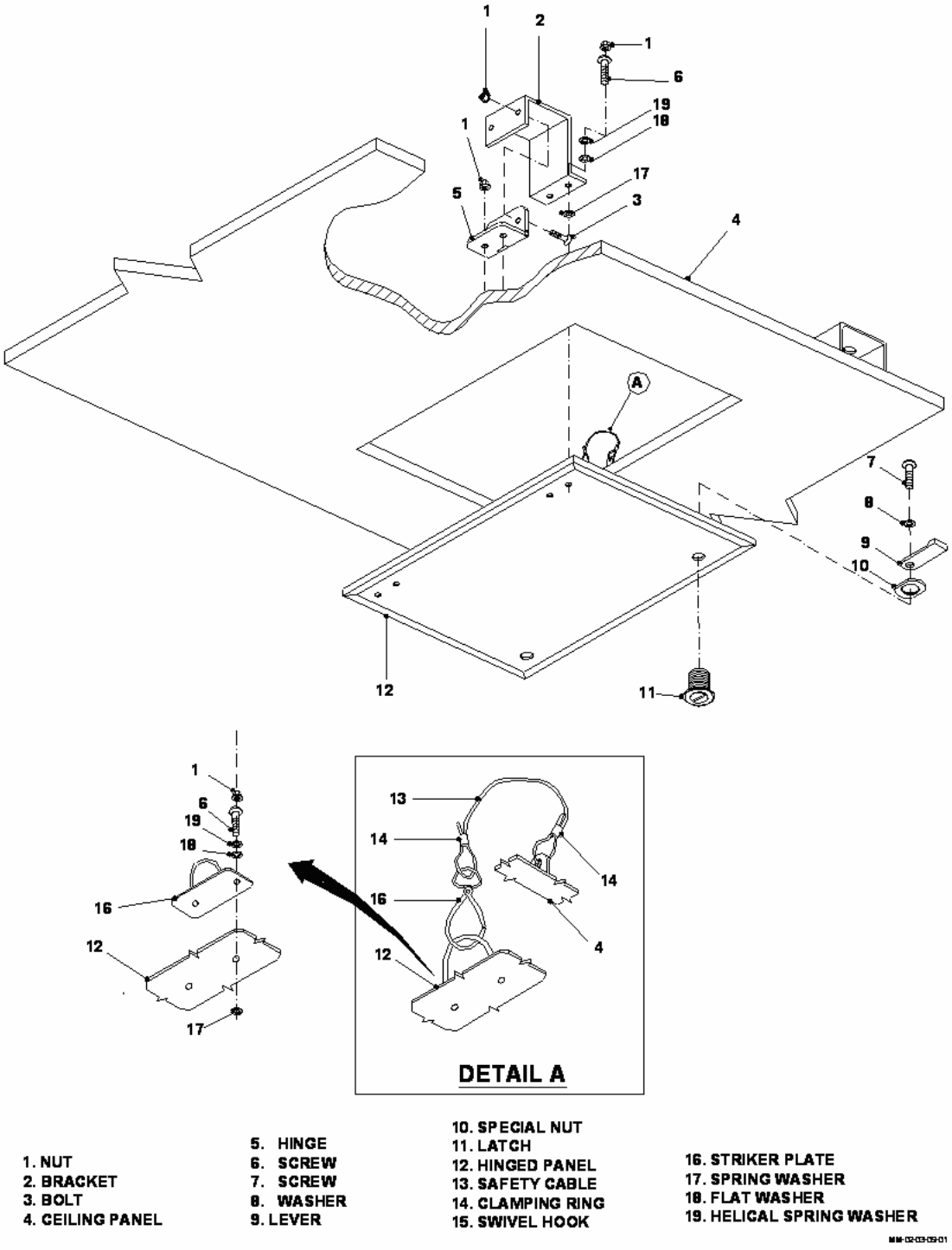


Figure 2-4.15 External Rear-View Mirrors - Location

2-4.3.1.b Specific Safety Precautions (Not Applicable)

2-4.3.1.c Fault Isolation

For External Rear-View Mirror Fault Isolation, refer to Table 2-4.11.

Table 2-4.11 External Rear-View Mirror - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Mirror vibrating.	1. Attaching / Adjusting parts loose / damaged.	1. Check / Fasten / Replace as necessary.
2. Mirror doesn't hold in position.	1. Adjusting parts loose / damaged.	1. Check / Fasten / Replace as necessary. 2. Replace.

2-4.3.1.d Disassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each External Rear-View Mirror, proceed as follows (Refer to Figure 2-4.16):

  1. Support External Rear-View Mirror by hand.
  2. Remove screws (3) and washers (4, 5).
  3. Remove arm (1) with mirror (2).
  4. Remove the external rear-view mirror (2) by losening the related attaching parts.

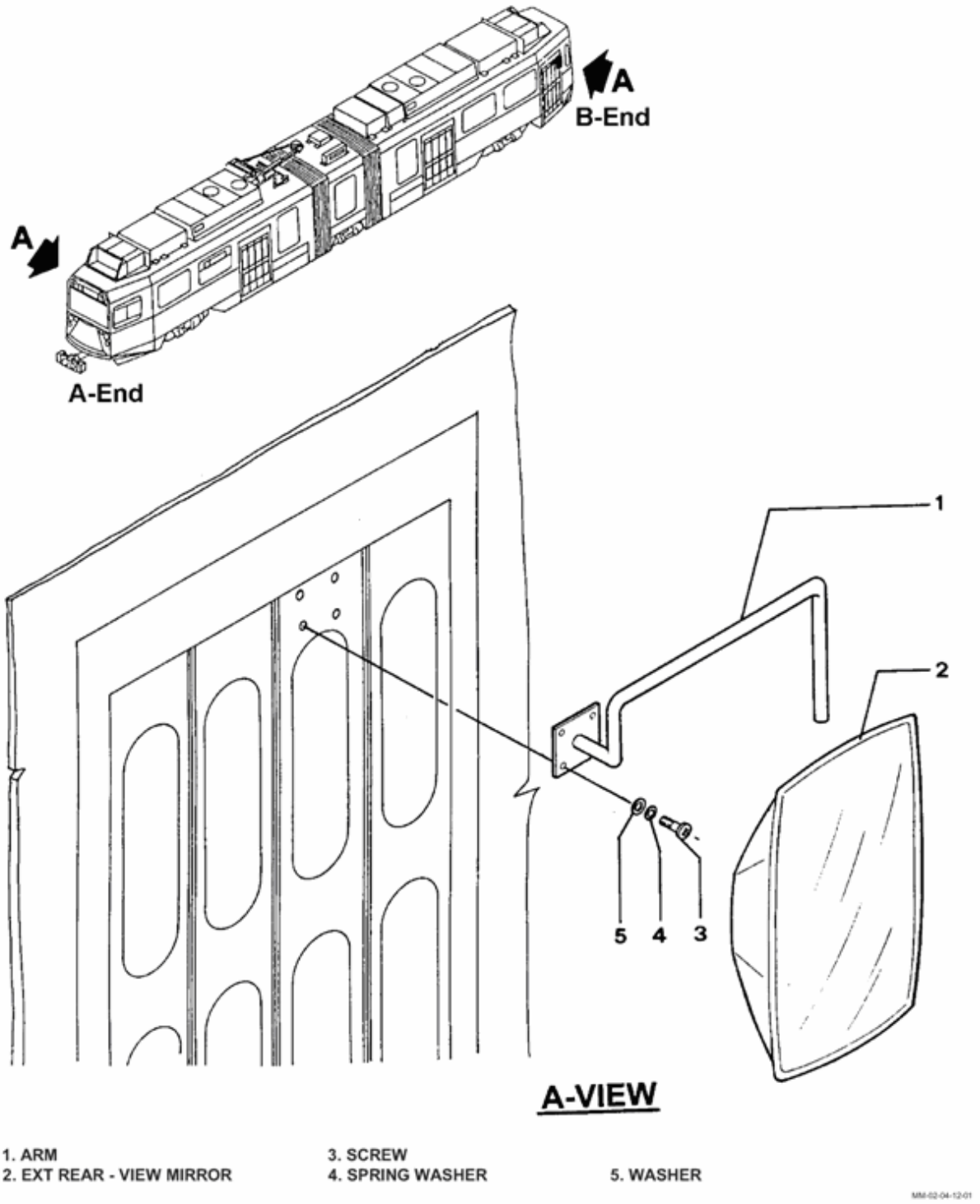


Figure 2-4.16 External Rear-View Mirrors - Removal

2-4.3.1.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean External Rear-View Mirror, proceed as follows:

  1. Clean the External Rear-View Mirror using mild detergent diluted in water; rinse with water and dry with cleaning rags.

b) Painting (Not Applicable)

2-4.3.1.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each External Rear-View Mirror, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect mirror for cracks or damages.
  3. Inspect mirror for correct installation.
  4. Using a Tape Measure, check and mark onto it the distance between one side-point of the Mirror Steamlined with respect to one point of the Vehicle side .
  5. Cycle the Front Door several times
  6. Using the same Tape Measure previously marked, re-check and mark onto it the distance between the same side-point of the Mirror Steamlined with respect to the same point of the Vehicle side.

7. Compare the two marks onto the Tape Measure per the following criteria:

Difference (between two marks)	Inspection Result
< 0.039 inch	The mirror holds its position
> 0.039 inch	The mirror doesn't holds its position Adjust Mirror by tightening the relevant hardware / Replace Mirror.

8. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.3.1.g Repair

External Rear-View Mirrors damaged should be replaced. Repair is not recommended.

2-4.3.1.h Reassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each External Rear-View Mirror, proceed as follows (Refer to Figure 2-4.17):

  1. Install the external rear-view mirror (2) on the arm (1) by locking the related attaching parts.
  2. Position External Rear-View Mirror (2) with the arm (1) on the passengers door.
  3. Install the washers (4, 5) and screws (3).
  4. Adjust External Rear-View Mirror as required.
  5. Tighten the screws (3) to **7 lb-ft (9.5 Nm)**.

6. Open the Front Door first and then ,using a Tape Measure, check and mark onto it the distance between one side-point of the Mirror Steamlined with respect to one point of the Door Panel.
7. Cycle the Front door several times.
8. With the Front Door open and using the same Tape Measure previously marked , re-check and mark onto it the distance between the same side-point of the Mirror Steamlined with respect to the same point of the Door Panel.
9. Compare the two marks onto the Tape Measure per the following criteria

Difference (between two marks)	Inspection Result
< 0.039 inch	The mirror holds its position
> 0.039 inch	The mirror doesn't holds its position Adjust Mirror by tightening the relevant hardware / Replace Mirror.

2-4.3.1.i Adjustment/Test (Not Applicable)

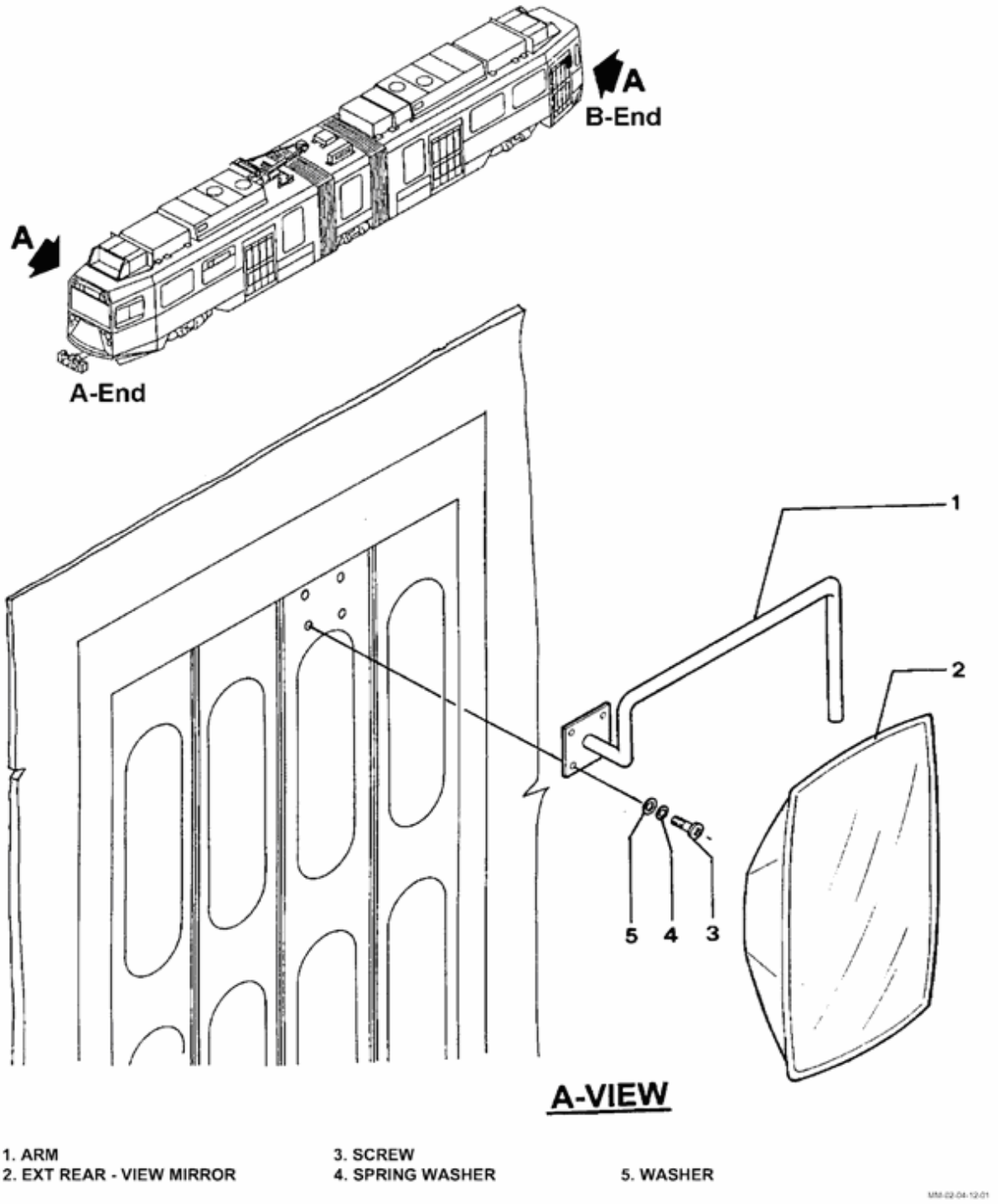


Figure 2-4.17 External Rear-View Mirrors - Installation

2-4.3.2 Inner Rear-View Mirrors

2-4.3.2.a Description and Theory of Operation

Each Operator's Cab is equipped with one Inner Rear-View Mirror (Refer to Figure 2-4.18), installed on the right side of the Operator Cab. The mirror is a convex type glass with durable silvering and provided with an impact resistant edge trim.

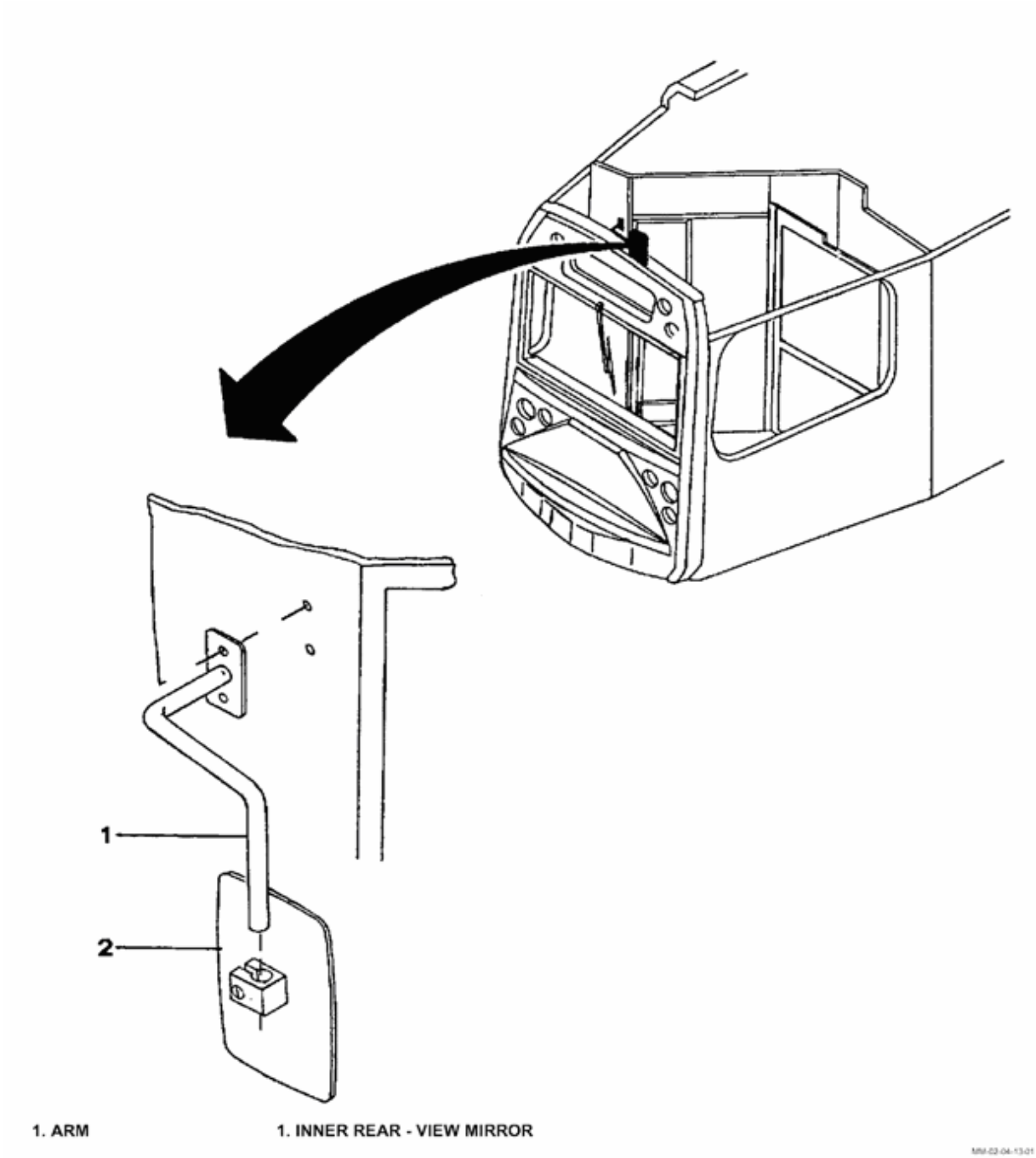


Figure 2-4.18 Inner Rear-View Mirrors - Location

2-4.3.2.b Specific Safety Precautions (Not Applicable)

2-4.3.2.c Fault Isolation

For Inner Rear-View Mirror Fault Isolation, refer to Table 2-4.12.

Table 2-4.12 Inner Rear-View Mirror - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Mirror vibrating.	1. Attaching parts loose.	1. Check / Fasten.
	1. Adjusting parts damaged.	1. Replace (Refer to para 2-4.3.2.d).

2-4.3.2.d Disassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Inner Rear-View Mirror, proceed as follows (Refer to Figure 2-4.19):

  1. Support Inner Rear-View Mirror by hand.
  2. Remove the screws (3) and the washers (4, 5)
  3. Remove the arm (1) with the Inner Rear-View Mirror (2).
  4. Remove the Inner Rear-View Mirror (2) from the arm (1) by losening the related attaching parts.

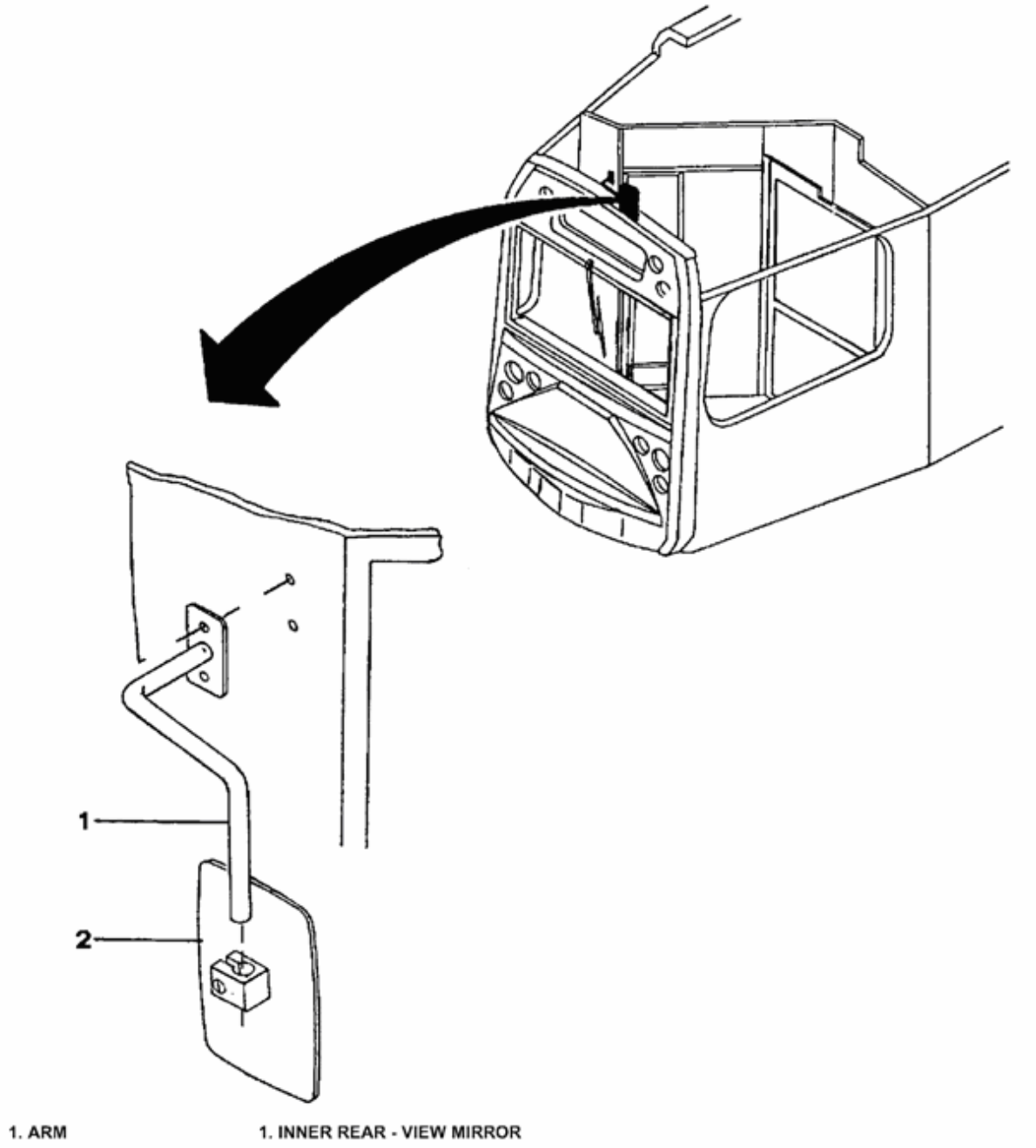


Figure 2-4.19 Inner Rear-View Mirrors - Removal

2-4.3.2.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Inner Rear-View Mirror, proceed as follows:

  1. Clean the Inner Rear-View Mirror using mild detergent diluted in water; rinse with water and dry with cleaning rags.

b) Painting (Not Applicable)

2-4.3.2.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Inner Rear-View Mirror, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect mirror for cracks or damages.
  3. Inspect mirror for correct installation.
  4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.3.2.g Repair

External Rear-View Mirrors damaged should be replaced. Repair is not recommended.

2-4.3.2.h Reassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To install Inner Rear-View Mirror, proceed as follows (Refer to Figure 2-4.20):
  1. Clean the mirror installation seat.
  2. Install Inner Rear-View Mirror (2) on the arm (1) by locking the related attaching parts.
  3. Position arm (1) with the mirror (2).
  4. Install the washers (4, 5) and the screws (3).
  5. Tighten screws (3) to **7 lb-ft (9.5 Nm)**.
  6. Check the right operation of the Inner Rear-View Mirror as required Adjust.
  7. Each Operator's Cab is equipped with one Inner Rear-View Mirror (Refer to Figure 2-4.18), installed on the right side of the Operator Cab. The mirror is a convex type glass with durable silvering and provided with an impact resistant edge

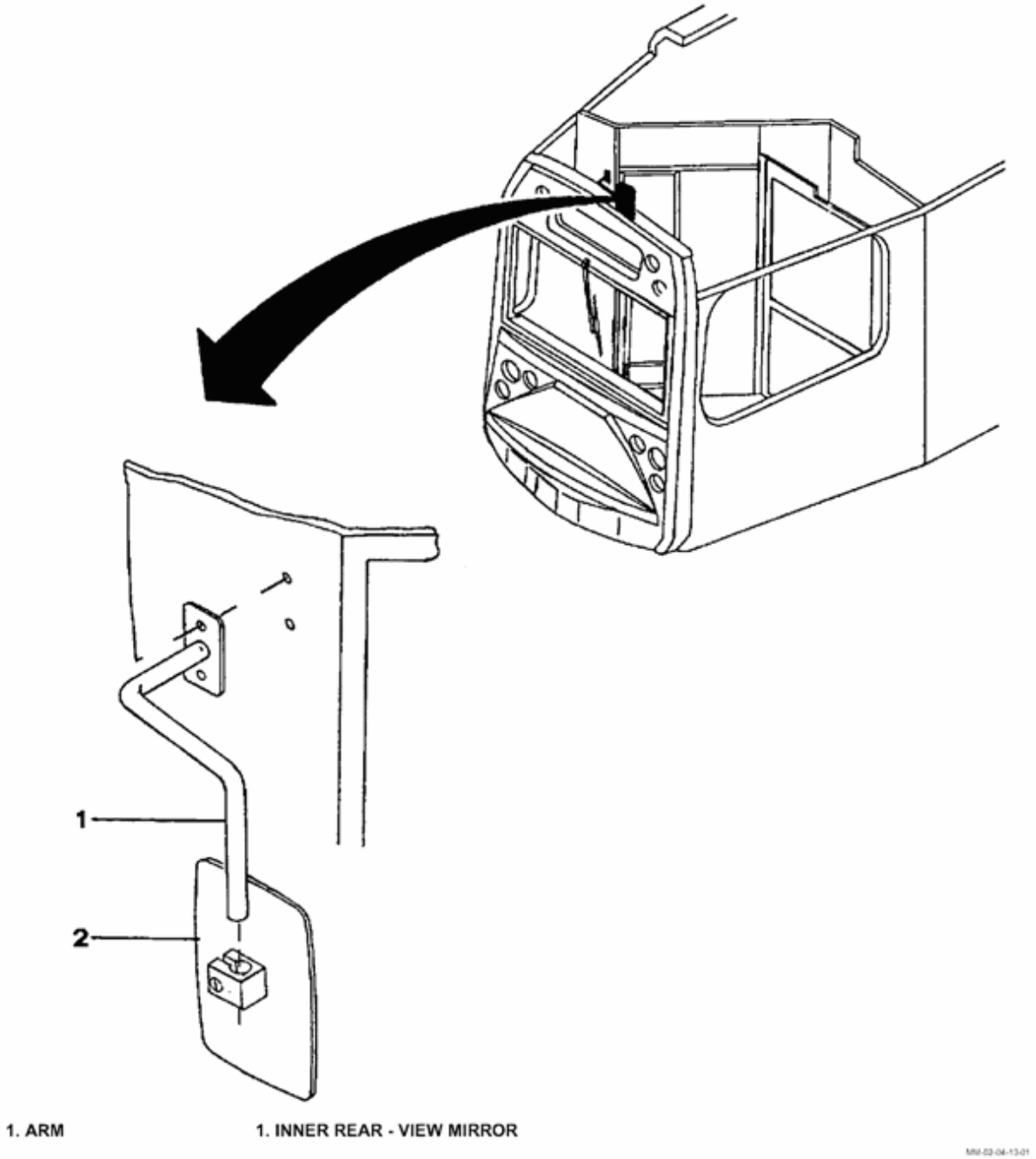


Figure 2-4.20 Inner Rear-View Mirrors - Installation

2-4.4 Cab Dividing Wall

2-4.4.a Description and Theory of Operation

Each Operator's Cab is provided with one Cab Dividing Wall (Refer to Figure 2-4.21) to separate the Operator from the Passenger Compartment.

Every Cab Dividing Wall consists of an Inner Wall (7) and a Rear Wall (6).

Between the Inner and Rear Walls is installed the Electrical Box (12) which contains Electrical/Electronic Equipment accessible for maintenance by 3 sides by removing the relevant Panels (9, 10, 13, 15, 16).

On the Cubicle Upper Panel (15) a Notice Frame (14) is installed.

On the (Inner Wall), upper part of the Electrical Box is installed the LV/MV Circuit Breakers Panel (11).

An Entrance Wall (1), provided with Handrail (2) and the Fill Up Door (Wiper Wash Tank), closes the Cab on the enter door side.

A (Double Folding Wing) Door (4), provided with Sliding Carriage (19), Lower Grid (5), Handle (17) and Key Lock (18) allows to the close cab.

A Curtain (8) closes the Cab Door opening when the Cab Door is open and latched tightly against the cab partition.

Each Operator's Cab is provided with one Cab Dividing Wall (Refer to Figure 2-4.21) to separate the Operator from the Passenger Compartment.

Every Cab Dividing Wall consists of an Inner Wall (7) and a Rear Wall (6).

Between the Inner and Rear Walls is installed the Electrical Box (12) which contains Electrical/Electronic Equipment accessible for maintenance by 3 sides by removing the

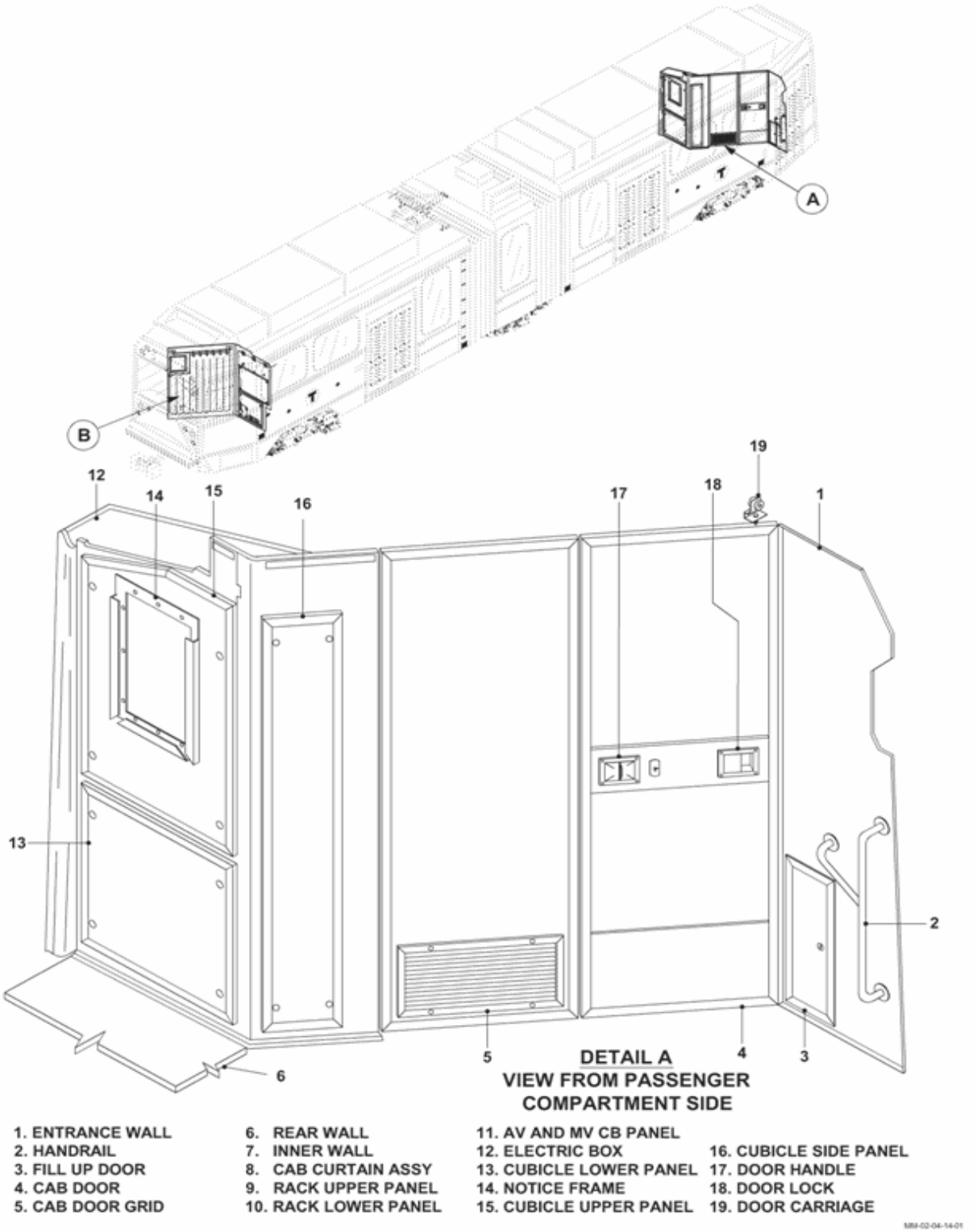
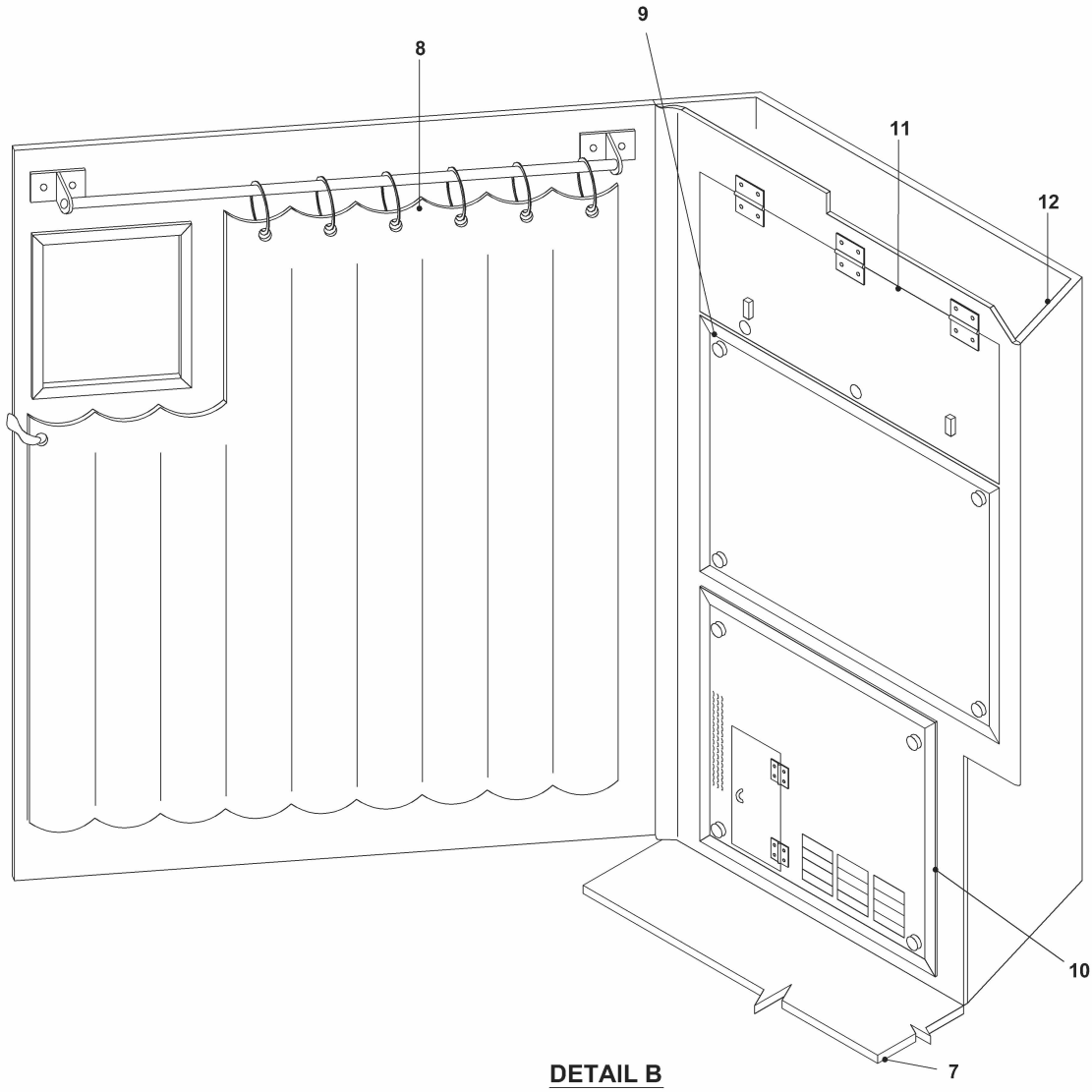


Figure 2-4.21 Cab Dividing Wall – Components (Sheet 1 of 2)



1. ENTRANCE WALL
2. HANDRAIL
3. FILL UP DOOR
4. CAB DOOR
5. CAB DOOR GRID
6. REAR WALL
7. INNER WALL
8. CAB CURTAIN ASSY
9. RACK UPPER PANEL
10. RACK LOWER PANEL
11. AV AND MV CB PANEL
12. ELECTRIC BOX
13. CUBICLE LOWER PANEL
14. NOTICE FRAME
15. CUBICLE UPPER PANEL
16. CUBICLE SIDE PANEL
17. DOOR HANDLE
18. DOOR LOCK
19. DOOR CARRIAGE

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Figure 2-4.21 Cab Dividing Wall – Components (Sheet 2 of 2)

2-4.4.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING CAB DIVIDING WALL PANELS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

WARNING: **CAB'S DOOR WEIGHS 147 LB (54.9 KG). DURING THE REMOVAL/INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2-4.4.c Fault Isolation

For Cab Dividing Wall Fault Isolation, refer to Table 2-4.13.

Table 2-4.13 Cab Dividing Wall - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Vibrating noise.	1. Attaching parts of panels are loose/defective.	1. Investigate. Fasten/Replace.
	2. Square key latches not properly fitted / damaged.	1. Fasten. Adjust (Refer to para 2-4.4.i). Replace (Refer to para 2-4.4.d h)).
	3. Cab door hinges not properly fitted/ damaged.	1. Fasten. Remove cab door (Refer to para 2-4.4.d) and replace hinge(s).
2. Panel key latches/door lock devices do not properly operate.	1. Square key latches / door lock damaged.	1. Replace (Refer to para 2-4.4.d d)).
3. Cab Door doesn't slide properly.	1. The Door Carriage don't operate properly.	1. Lubricate or replace it (Refer to para 2-4.4.d a)).
4. Cab Door doesn't open.	1. Door Lock damaged /faulty.	1. Check/Replace Door Lock Assy (Refer to para 2-4.4.d d)).

2-4.4.d Disassembly

The Cab Dividing Wall Disassembly procedures consist in the following main operations:

- Cab's Door Removal.
- Cab Door Grid Removal.
- Cab Curtain Removal.
- Door Lock Removal.
- Door Handle Removal.
- Cab Door Lock Components Removal.
- Coat Hook Removal.
- Visor Removal.
- Movable Panels Removal.
- Panel Latches - Typical Removal.
- Fixed Panels - Typical Removal.

a) Cab's Door Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

To Remove Cab's Door, proceed as follows (Refer to Figure 2-4.22):

WARNING:	**CAB'S DOOR WEIGHS 147 LB (54.9 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Open the door (1) completely.
2. Remove screw (3) from door hinge (9) (cab wall side).
3. Remove the door (1) by sliding carriage (10) out of slideway (11).

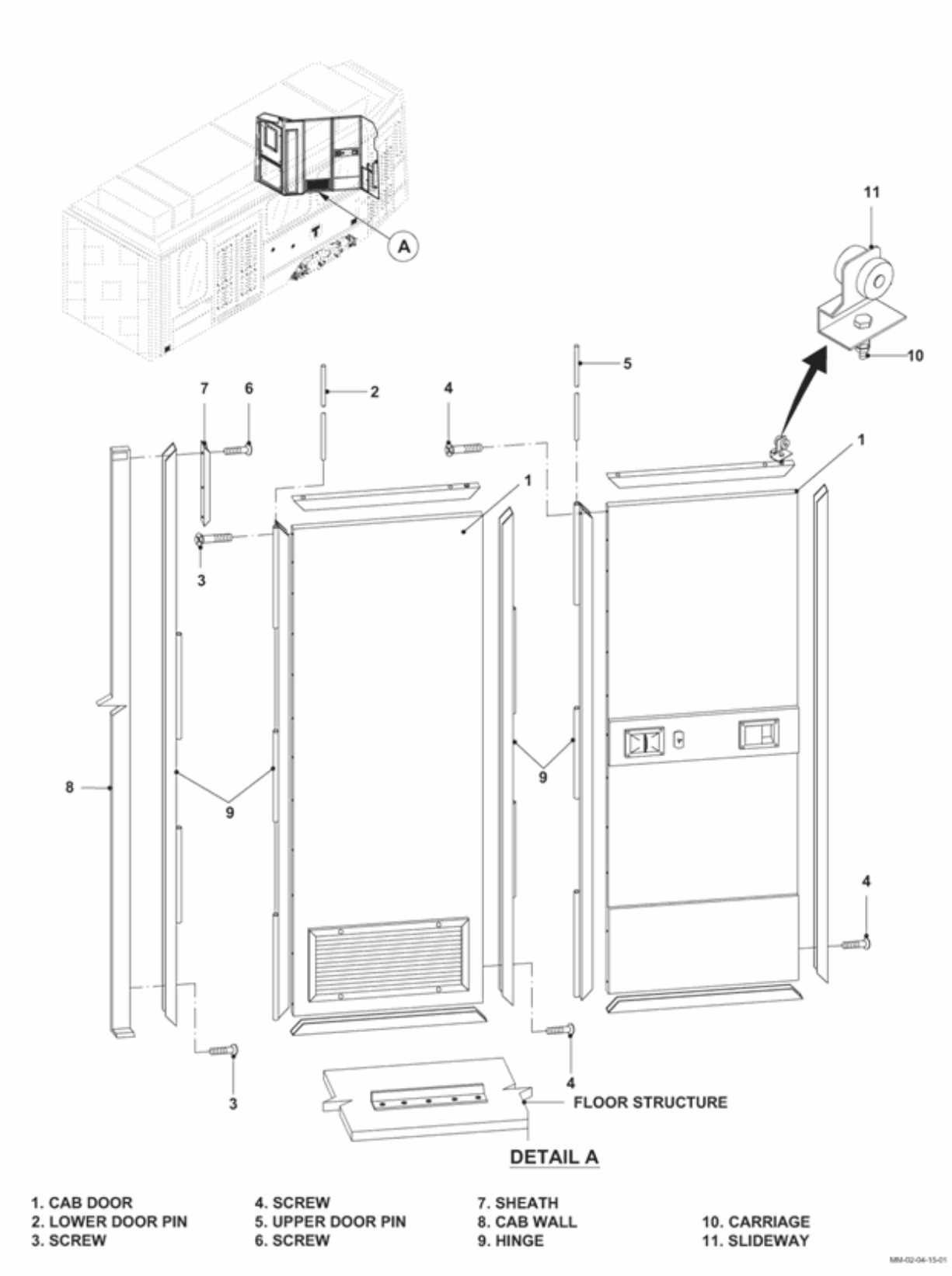


Figure 2-4.22 Cab Door - Removal

b) Cab Door Grid Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Cab Door Grid, proceed as follows (Refer to Figure 2-4.43):
  1. Remove screws (3).
  2. Remove grid support (2).
  3. Remove grid (1) from door.

c) Cab Curtain Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Cab Curtain, proceed as follows (Refer to Figure 2-4.23):
  1. Remove the headless screw (9).
  2. Unthread the pole (4) and contemporary remove the curtain (11).
  3. If necessary replace the pole supports (8, 10) removing the screws (5) and the washers (6, 7).
  4. Remove grid support (2).

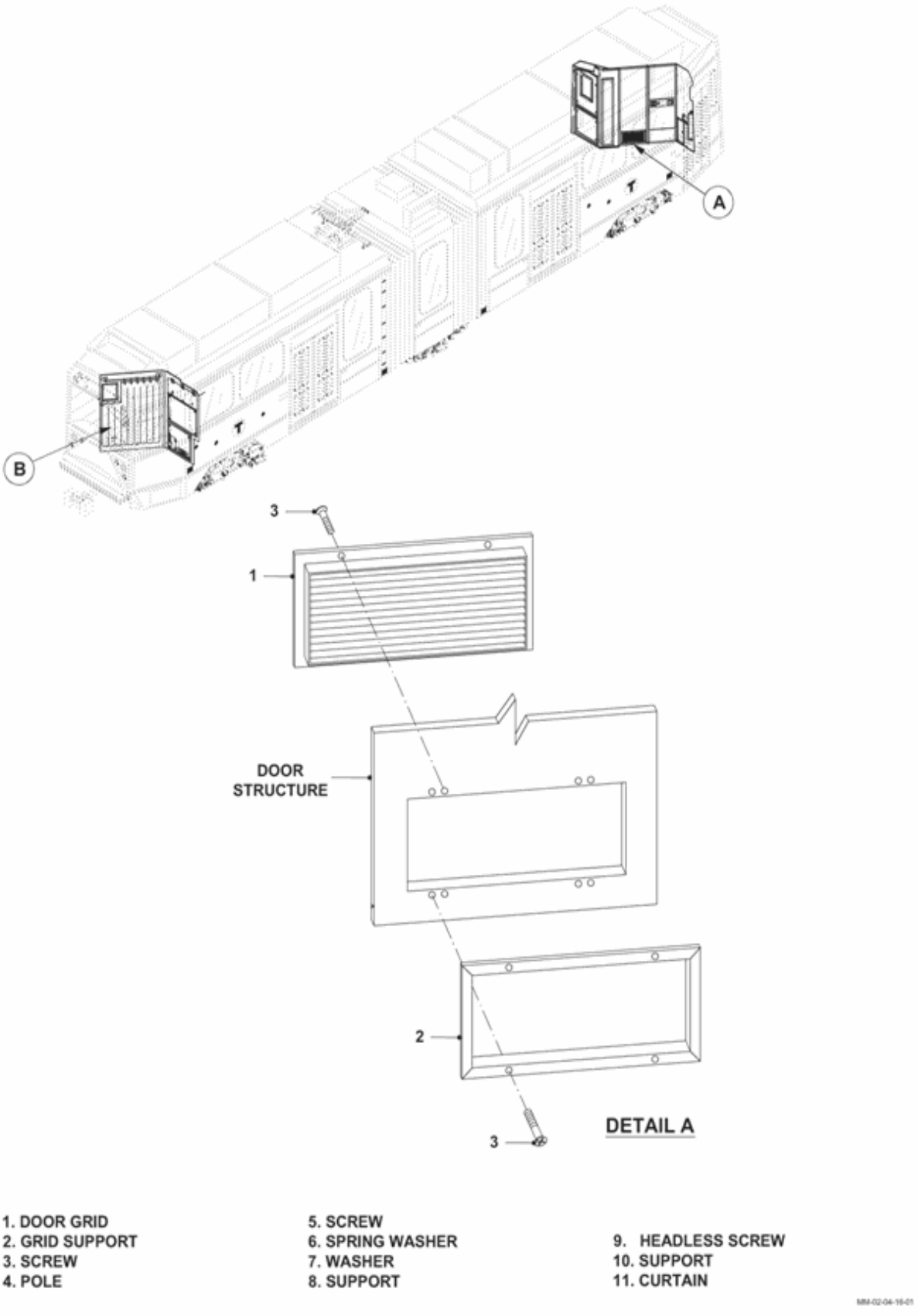
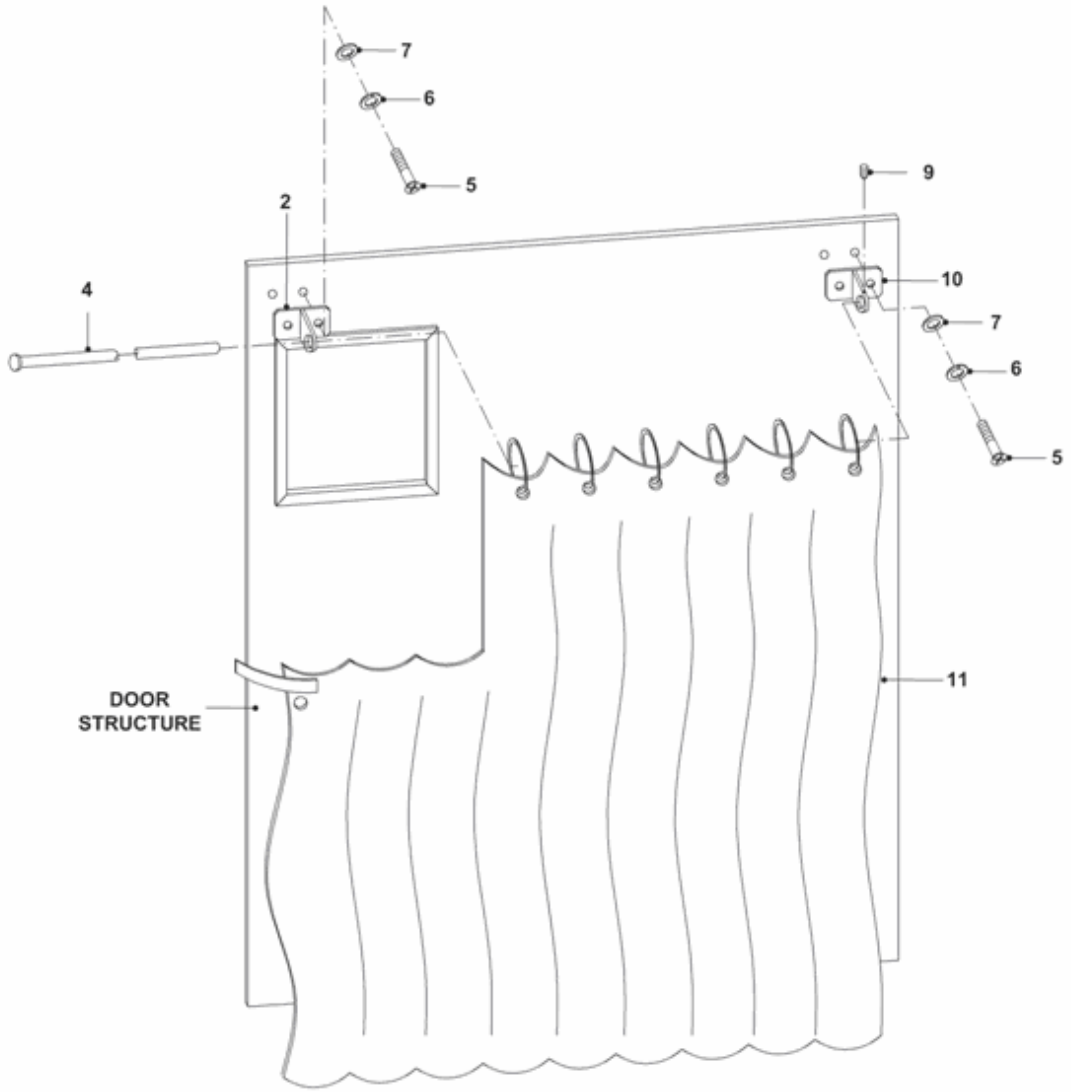


Figure 2-4.23 Cab Door Grid and Cab Curtain- Removal (Sheet 1 of 2)



DETAIL B

1. DOOR GRID
2. GRID SUPPORT
3. SCREW
4. POLE
5. SCREW
6. SPRING WASHER
7. WASHER
8. SUPPORT
9. HEADLESS SCREW
10. SUPPORT
11. CURTAIN

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Figure 2-4.23 Cab Door Grid and Cab Curtain- Removal (Sheet 2 of 2)

d) Door Lock Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Door Lock, proceed as follows (Refer to Figure 2-4.24):

  1. Open cab door.
  2. Remove screws (3) and disconnect Door Lock Assy (Front Part) (10) from related seat.
  3. Disassembly Door Lock Assy (Front Part) (10) as follows:
     a. Pull out pin (9).
     b. Remove spring (8).
     c. Disconnect lock front part (2) from handle (7).
  4. Remove screws (6) and washers (5).
  5. Remove lock FWD part (4).

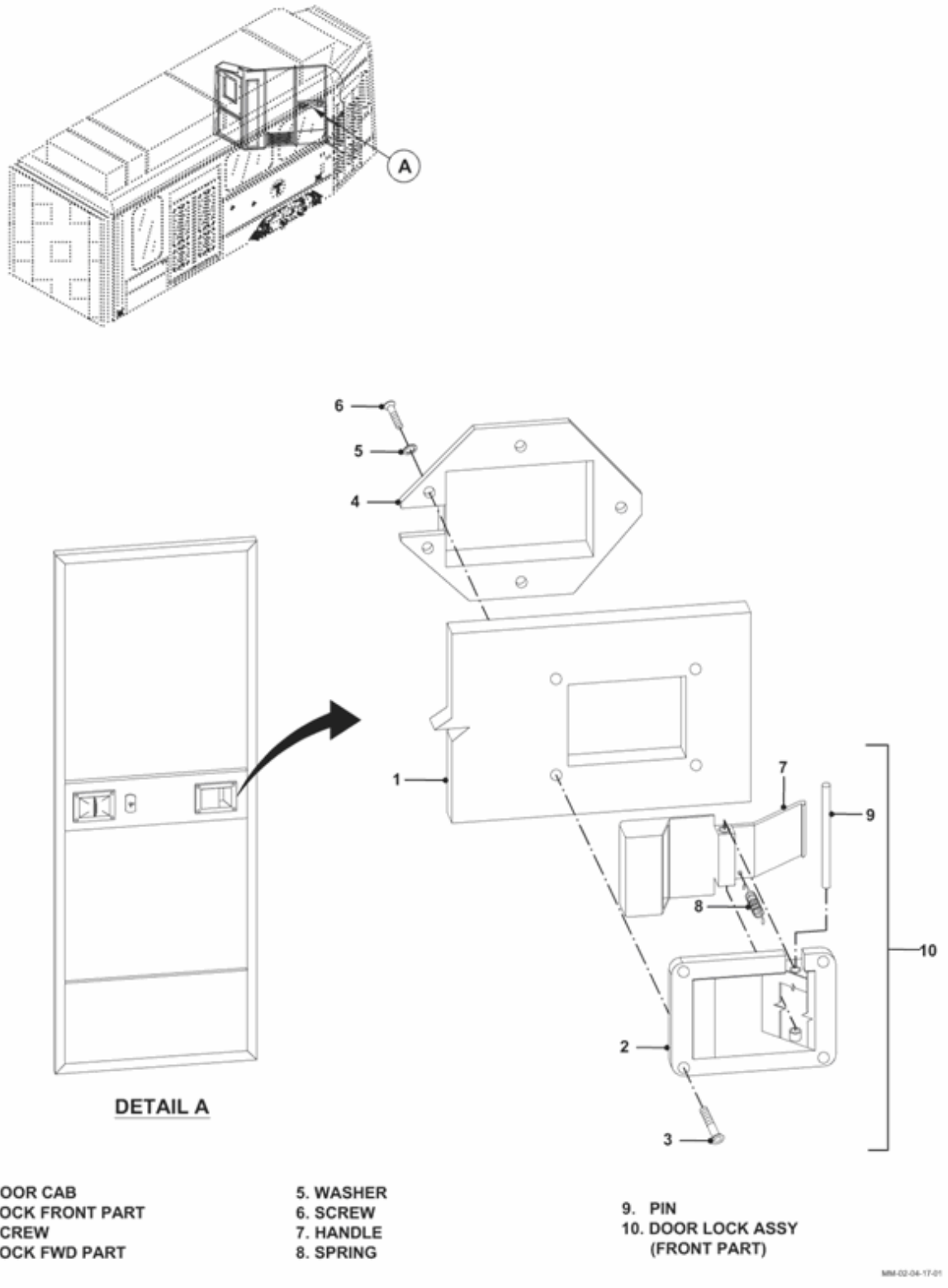


Figure 2-4.24 Door Lock - Removal

e) Door Handle Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Door Handle, proceed as follows (Refer to Figure 2-4.25):

  1. Locate Door Handle to be removed.
  2. Remove screws (3) and disconnect Door Handle (2) from related seat.
  3. Remove Door Handle (2).
  4. Remove screws (3) and disconnect Door Lock Assy (Front Part) (10) from related seat

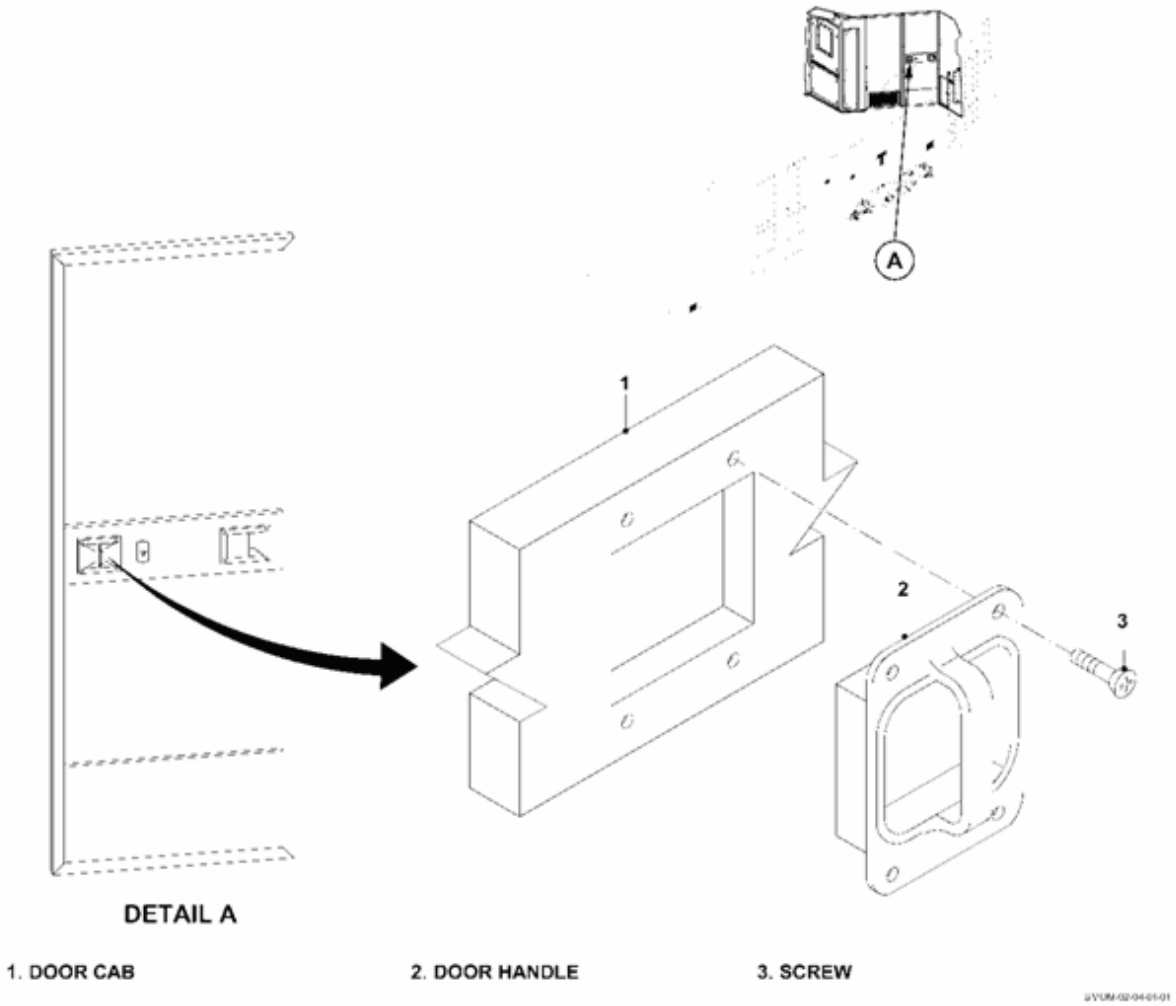


Figure 2-4.25 Door Handle - Removal

f) Cab Door Lock Components Removal

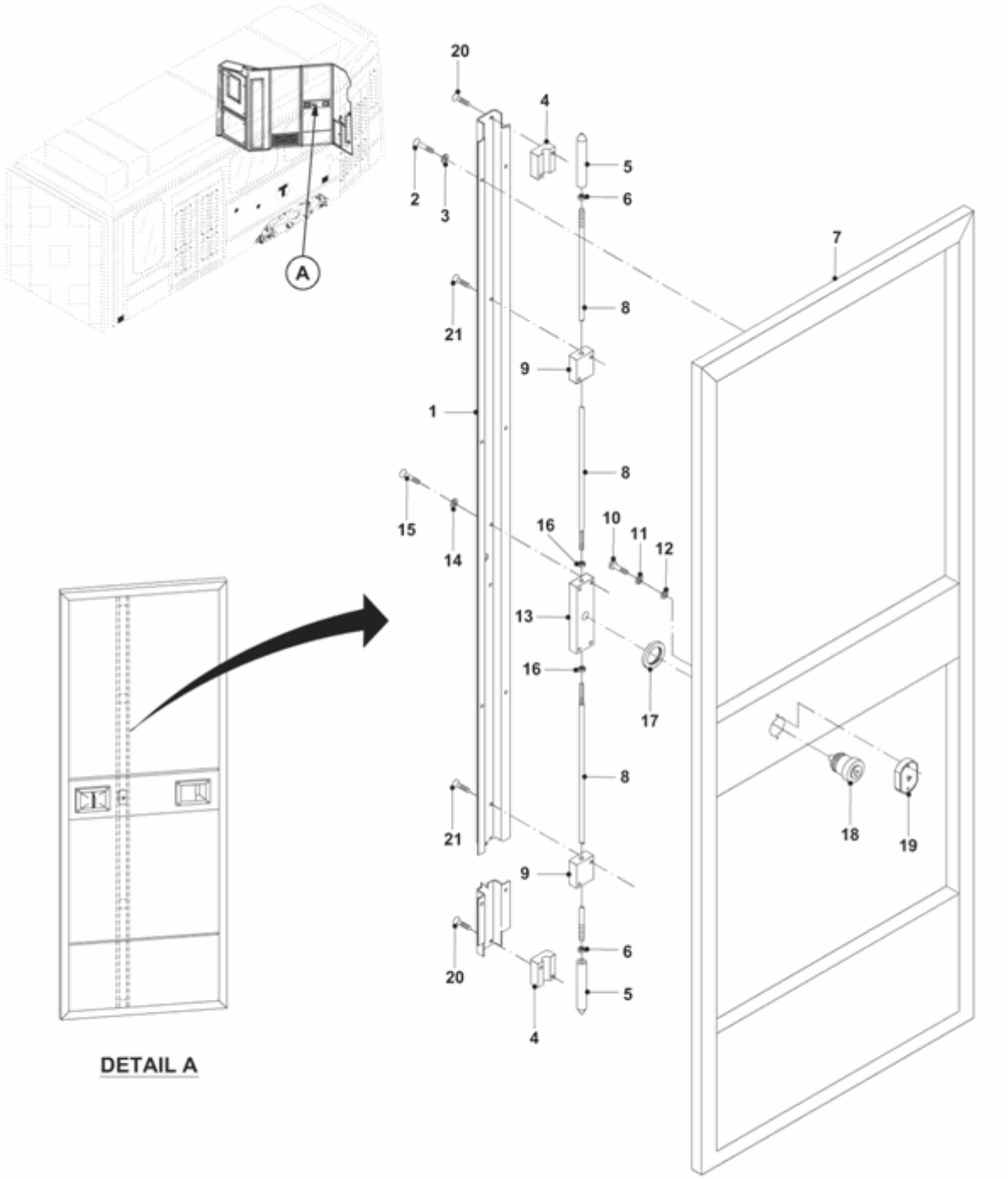
- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Cab Door Lock Components, proceed as follows (Refer to Figure 2-4.26):

  1. Open cab door.
  2. Support Lock Seat (1) and remove screws (2) and washers (3).
  3. Remove Lock Seat (1) with all components.
  4. At both seat end side, unscrew Pivots (5), nuts (6) and remove them.
  5. Unscrew Rods (8) from Lock (13).
  6. Remove nuts (16) from Rods (8).
  7. Drawn Rods (8) from Anchor Blocks (9).
  8. Remove screws (20, 21) and disconnect Blocks (4, 9).
  9. Remove screws (15) and washers (14).
  10. Remove Lock (13) from Lock Seat (1).
  11. Support Lock Cover (19) and remove screws (10) and washers (11, 12).
  12. Remove Lock Cover (19).
  13. Remove Locknut (17) and Lock (18) from related seat of Cab Door (7).



1. LOCK SEAT
2. SCREW
3. WASHER
4. BLOCK
5. PIVOT
6. NUT
7. CAB DOOR
8. ROD
9. ANCHOR BLOCK
10. SCREW
11. WASHER
12. WASHER
13. LOCK
14. WASHER
15. SCREW
16. NUT
17. LOCK NUT
18. LOCK
19. LOCK COVER
20. SCREW
21. SCREW

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Figure 2-4.26 Cab Door Lock Components - Removal

g) Coat Hook Removal

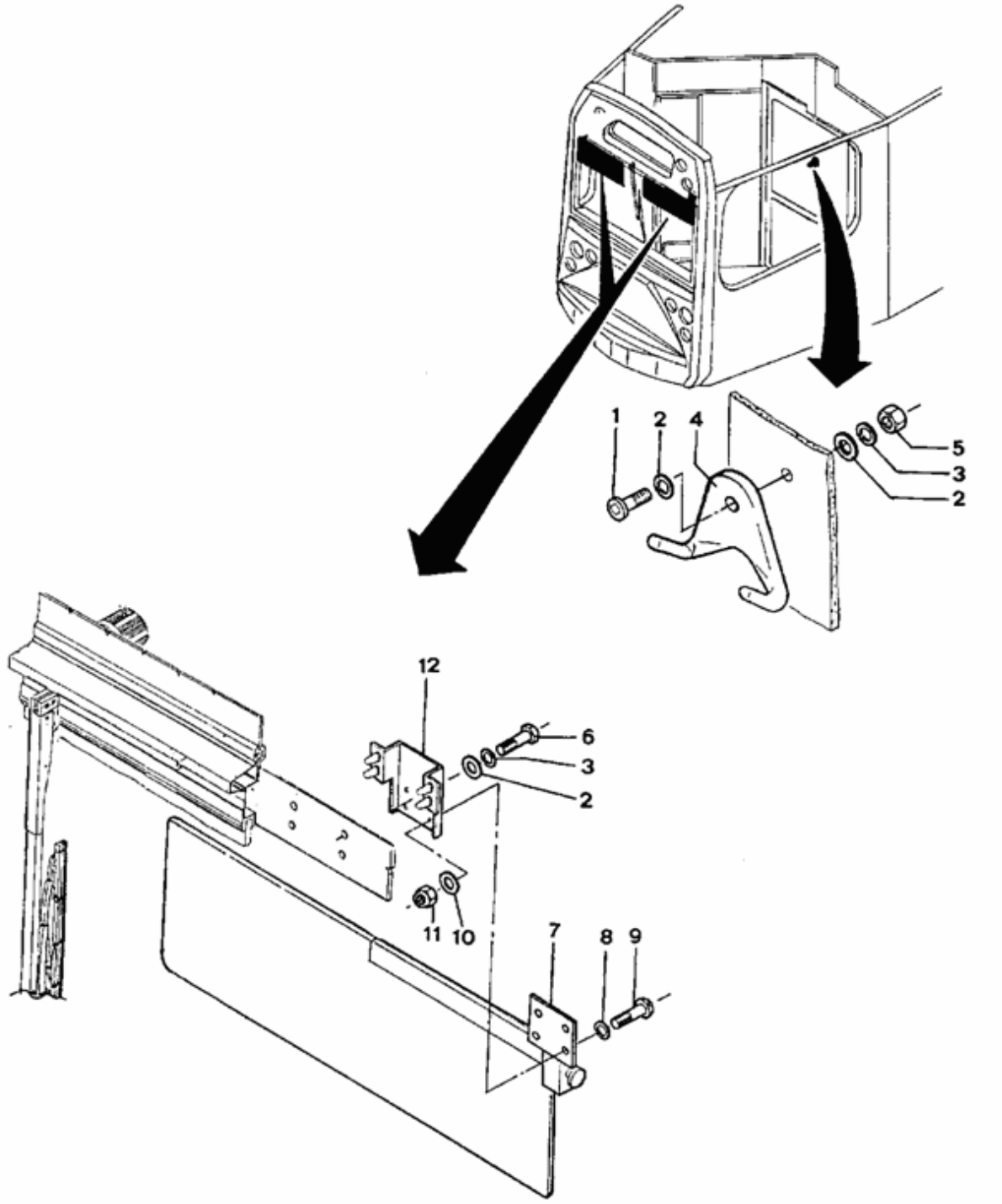
- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Coat Hook, proceed as follows (Refer to Figure 2-4.27):
  1. Remove the screw (1), washers (2, 3) and nut (5).
  2. Remove the Coat Hook (4).

h) Visor Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Visor, proceed as follows (Refer to Figure 2-4.27):
  1. Remove screws (9), washers (8, 10) and nuts (11).
  2. Remove the visor (7).
  3. If necessary remove the visor support (12) by removing bolts (6) and washers (2, 3).



1. SCREW
2. WASHER
3. SPRING WASHER
4. COAT HOOK
5. NUT
6. BOLT
7. VISOR
8. SPRING WASHER
9. SCREW
10. WASHER
11. NUT
12. SUPPORT

Figure 2-4.27 Visor and Coat Hook - Removal

i) Movable Panels Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Movable Panel, proceed as follows (Refer to Figure 2-4.21):
  1. Open the latches using the Maintenance Key.
  2. Remove Movable Panels (9, 10, 13, 15, 16).

j) Panel Latches - Typical Removal

- **Procedure.**

  To Remove each Panel Latch, proceed as follows:
  1. Using the Maintenance Key open the involved panel.
  2. Remove attaching parts from the involved latch and remove it.

k) Fixed Panels - Typical Removal

- **Procedure.**

  To Remove each Fixed Panel, proceed as follows:
  1. Remove the Fixed Panels by removing the related attaching parts.
  2. Remove moldings.

2-4.4.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Cab Dividing Wall components, proceed as follows:

  1. Clean the Cab Dividing Wall components using cleaning mild detergent diluted in water; rinse with water and dry with cleaning rags.

b) Painting

For Cab Dividing Wall components Painting procedure, refer to para 2-2.e.

2-4.4.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Cab Dividing Wall, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Cab Dividing Wall components for dents, cracks or otherwise damages.
  3. Inspect door for correct installation.
  4. Check that cab door moves freely.
  5. Inspect cab door for correct installation.
  6. Inspect Cab Dividing Wall Panels for conditions and correct installation.
  7. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.4.g Repair

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Repair Cab Dividing Wall, proceed as follows:
  1. Glass. The damaged glass must be replaced. Repair is not applicable.
  2. Panels. For panels Repair refer to para 2-2.3.g.
  3. Frame. Frame not seriously damaged can be repaired using standard tools, as for standard workshop practices.

2-4.4.h Reassembly

The Cab Dividing Wall Reassembly procedures consist in the following main operations:

- Cab's Door Installation.
- Cab Door Grid Installation.
- Cab Curtain Installation.
- Door Lock Installation.
- Door Handle Installation.
- Cab Door Lock Components Installation.
- Coat Hook Installation.
- Visor Installation.
- Movable Panels Installation.
- Panel Latches - Typical Installation.
- Fixed Panels - Typical Installation.

a) Cab's Door Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

To Install Cab's Door, proceed as follows (Refer to Figure 2-4.28):

WARNING:	**CAB'S DOOR WEIGHS 147 LB (54.9 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Position the door (1) inserting carriage (10) in the related seat of slideway (11).
2. Align hinge holes in corrispondence with cab wall holes (See Detail D).
3. Install the screws (3).
4. Tighten the screws (3) to **5 lb-ft (6.8 Nm)**.
5. Position sheath (7).
6. Install and tighten screws (6) to **5 lb-ft (6.8 Nm)**.
7. Check cab door operates properly.

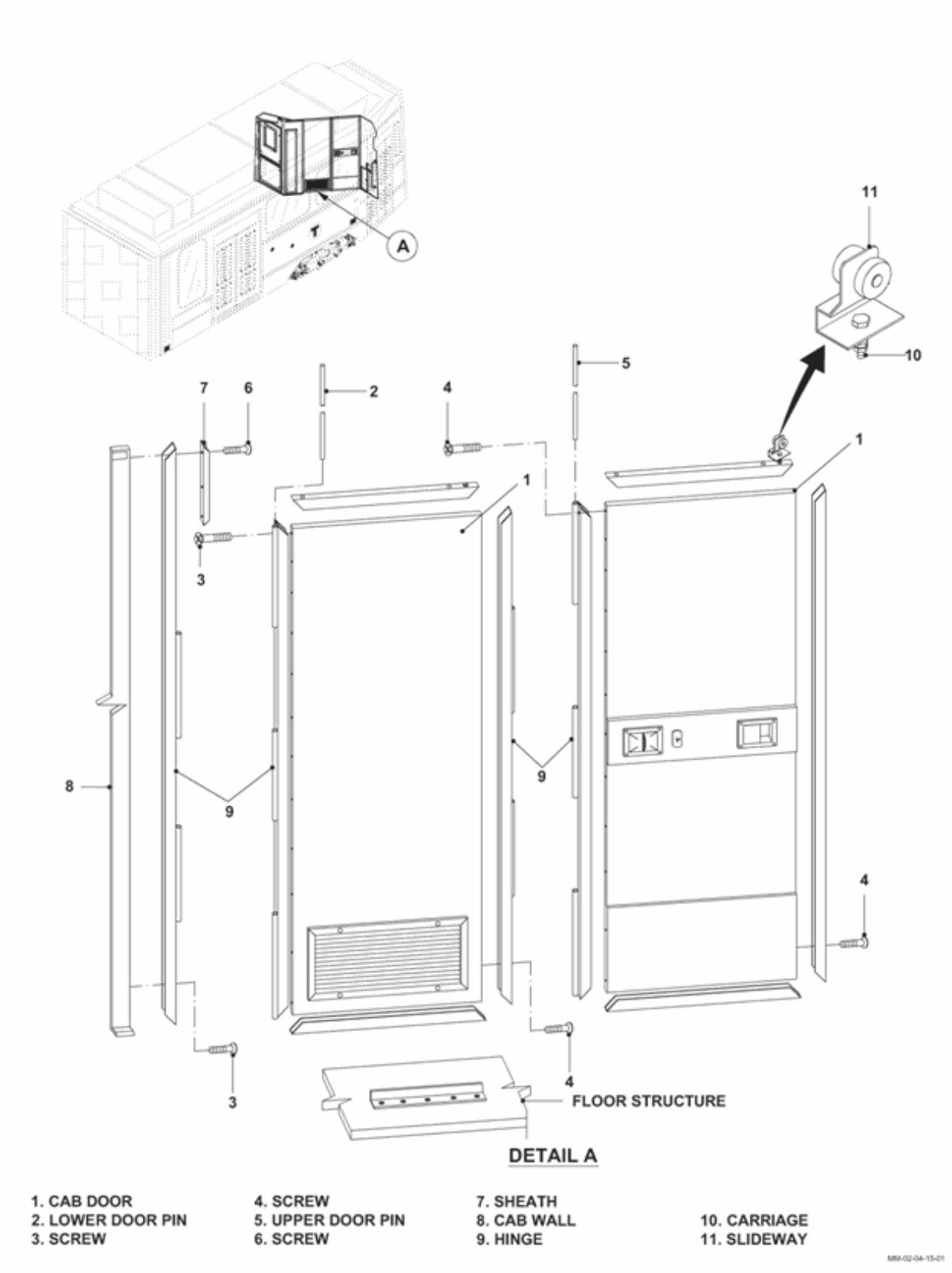


Figure 2-4.28 Cab Door - Installation

b) Cab Door Grid Installation

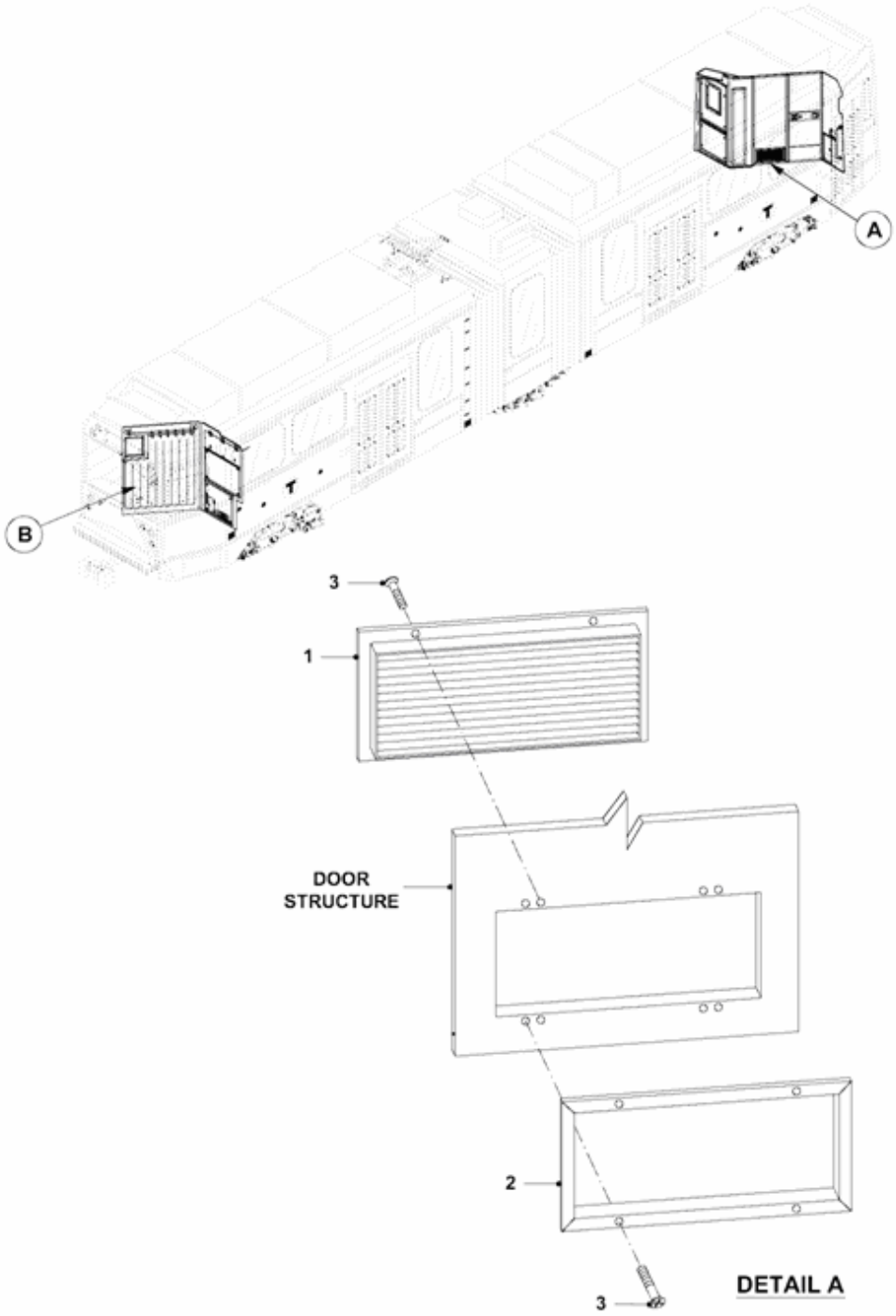
- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Cab Door Grid, proceed as follows (Refer to Figure 2-4.29):
  1. Clean the grid support seat.
  2. Position the grid support (2) on the door.
  3. Position the grid (1) on the grid support (2).
  4. Install and tighten the screws (3).

c) Cab Curtain Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Cab Curtain, proceed as follows (Refer to Figure 2-4.29):
  1. If necessary, install pole supports (8, 10) by installing washers (6, 7) and screws (5).
  2. Tighten screws (5) as required.
  3. Thread the pole into the pole support (8) and contemporary insert the curtain rings into the pole.
  4. Complete the pole installation by inserting the pole end into the support (10).
  5. Install and tighten the headless screw (9)
  6. . Install and tighten screws (6) to **5 lb-ft (6.8 Nm)**.



1. DOOR GRID
2. GRID SUPPORT
3. SCREW
4. POLE
5. SCREW
6. SPRING WASHER
7. WASHER
8. SUPPORT
9. HEADLESS SCREW
10. SUPPORT
11. CURTAIN

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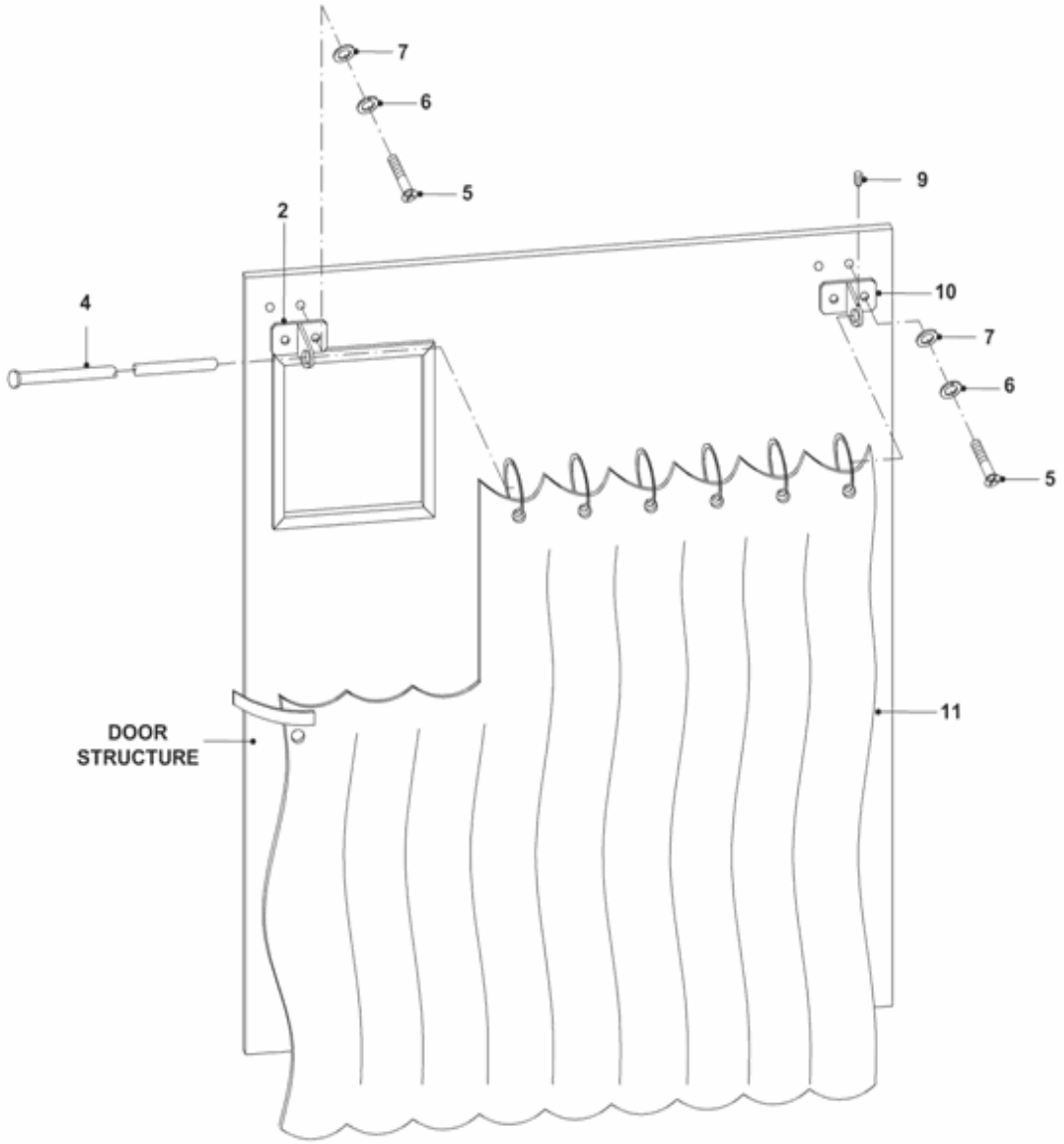
7.



1. DOOR GRID
2. GRID SUPPORT
3. SCREW
4. POLE
5. SCREW
6. SPRING WASHER
7. WASHER
8. SUPPORT
9. HEADLESS SCREW
10. SUPPORT
11. CURTAIN

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Figure 2-4.29 Cab Door Grid and Cab Curtain - Installation (Sheet 1 of 2)

Figure 2-4.29 Cab Door Grid and Cab Curtain - Installation (Sheet 2 of 2)

d) Door Lock Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Door Lock, proceed as follows (Refer to Figure 2-4.30):
  1. Open cab door.
  2. Clean lock seat.
  3. Position lock FWD part (4).
  4. Install and tighten washers (5) and screws (6).
  5. Assembly Door Lock Assy (Front Part) (10) as follows:
     a. Connect lock front part (2) to the handle (7).
     b. Insert pin (9).
     c. Install spring (8).
  6. Position Door Lock Assy (Front Part) (10) in the related seat.
  7. Install and tighten screws (3).

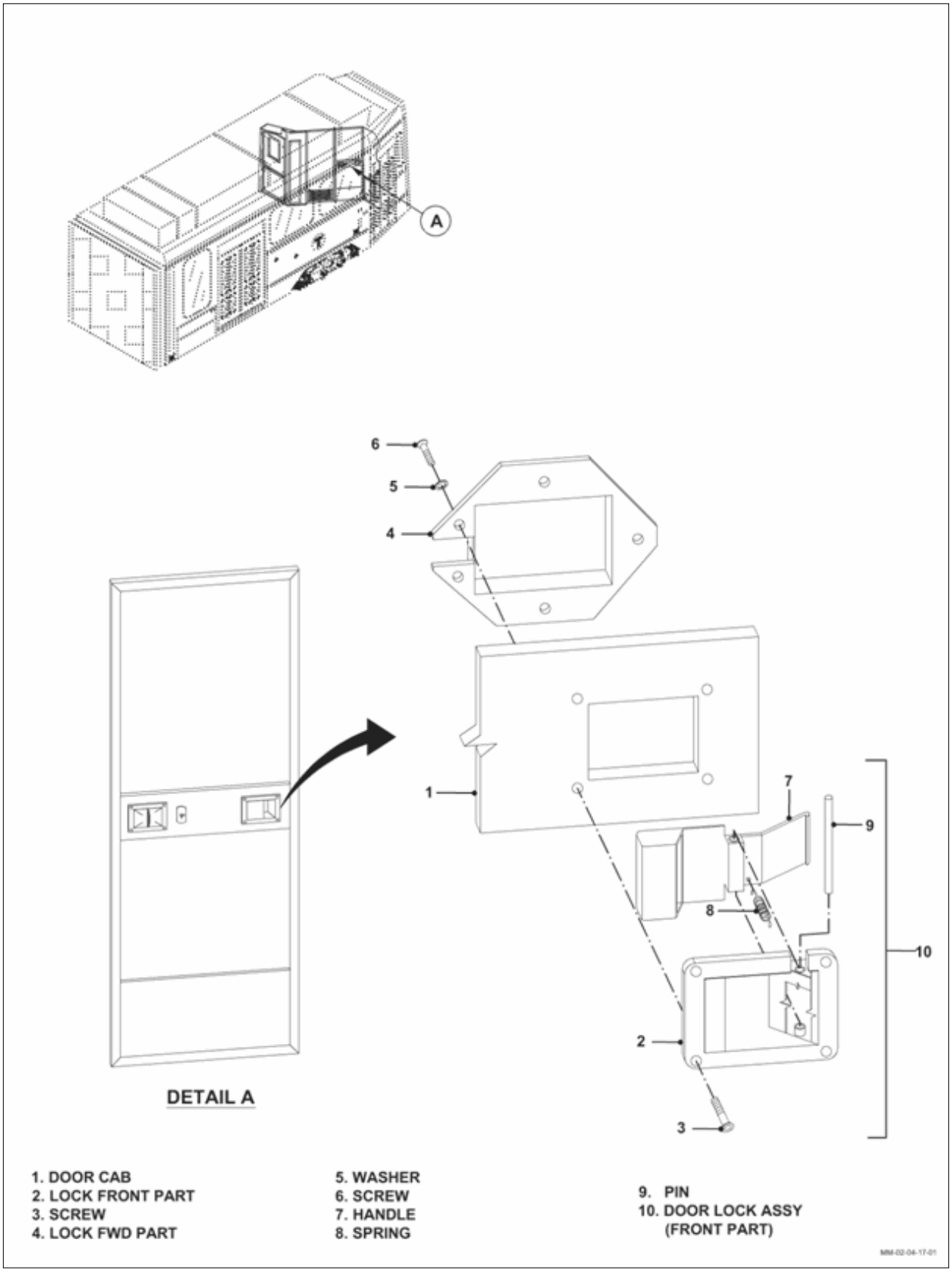


Figure 2-4.30 Door Lock - Installation

e) Door Handle Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Door Handle, proceed as follows (Refer to Figure 2-4.31):
  1. Position Door Handle (2) in the related seat.
  2. Install and tighten screws (3).

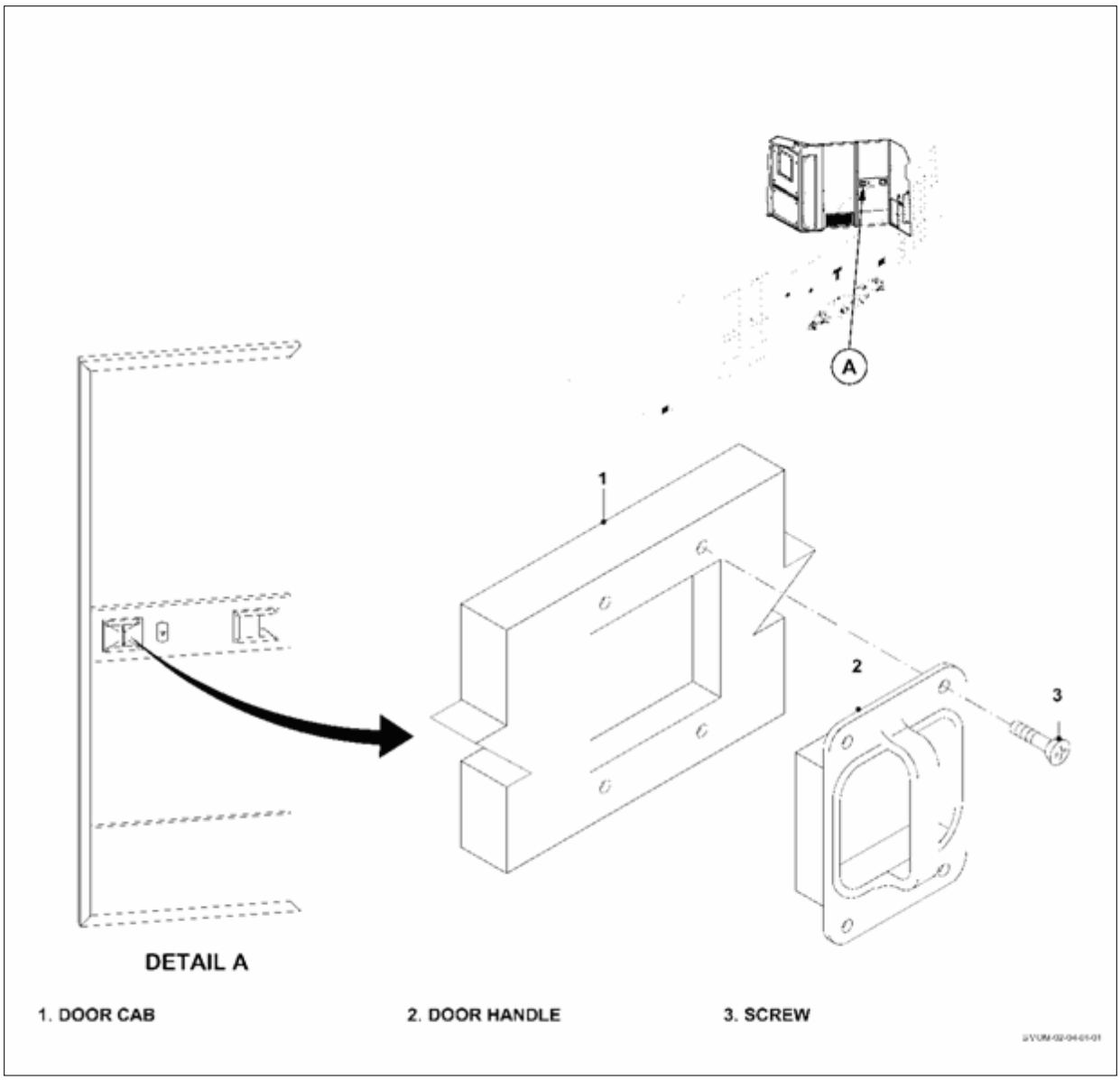


Figure 2-4.31 Door Handle - Installation

f) Cab Door Lock Components Installation

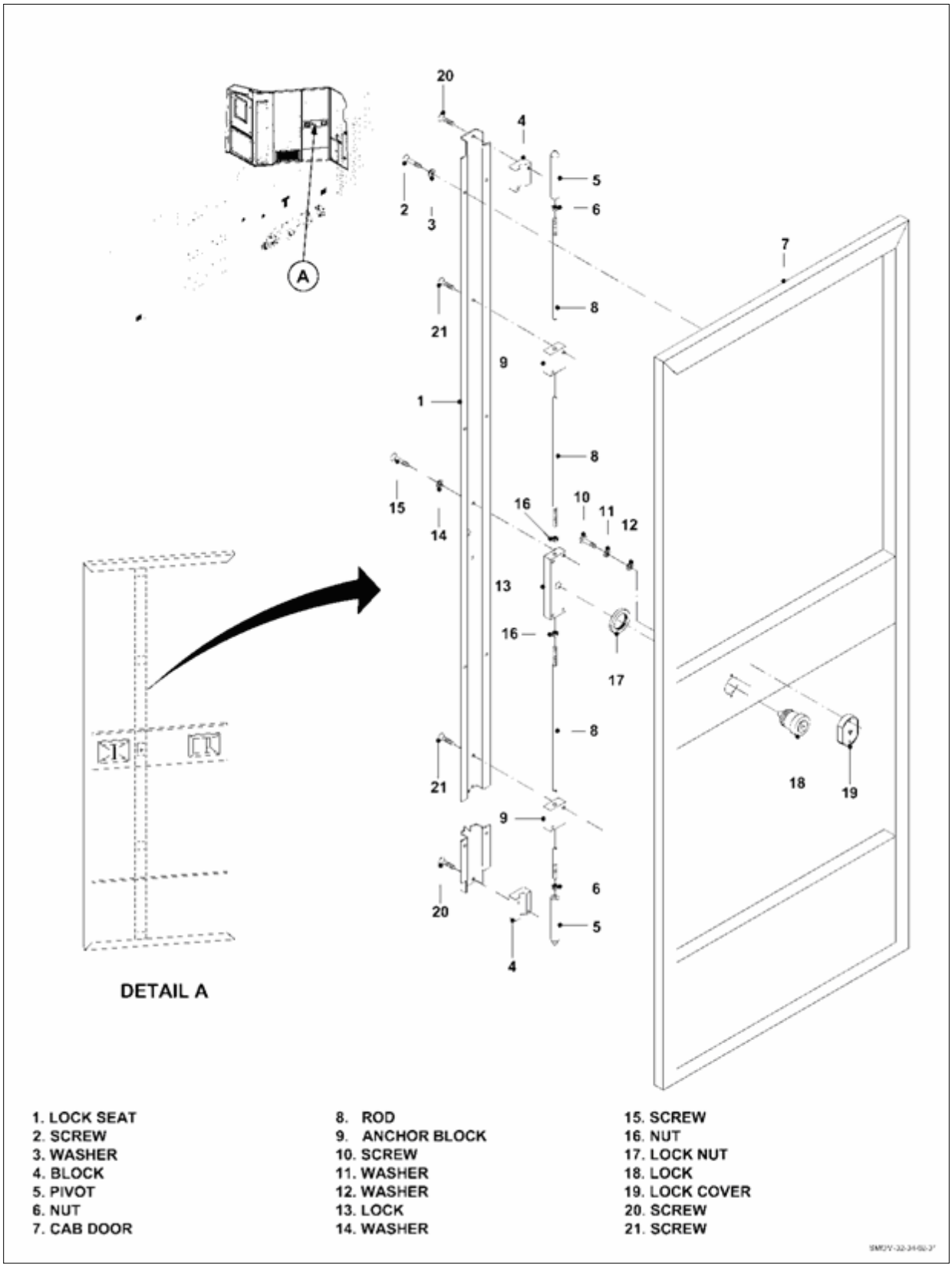
- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Cab Door Lock Components, proceed as follows (Refer to Figure 2-4.32):

  1. Open cab door.
  2. Position Lock (18) in the related seat of Cab Door (7).
  3. Install and tighten Locknut (17).
  4. Position Lock Cover (19).
  5. Install screws (10) and washers (11, 12).
  6. Tighten screws (10).
  7. Position Lock (13) in the related seat of Lock Seat (1).
  8. Install screws (15) and washers (14).
  9. Tighten screws (15).
  10. Position Blocks (4, 9) and lock them by installing screws (20, 21).
  11. Tighten screws (20, 21).
  12. Insert Rods (8) in the Anchor Block (9).
  13. At both rod side, install nuts (6, 16).
  14. Install Rods (8) in the Lock (13) and lock it by tightening nut (16).
  15. Install Pivot (5) and lock it by tightening nut (6).
  16. Position Lock Seat (1) with all components on the Cad Door (7).
  17. Install screws (2) and washers (3).
  18. Tighten screws (3).



1. LOCK SEAT
2. SCREW
3. WASHER
4. BLOCK
5. PIVOT
6. NUT
7. CAB DOOR
8. ROD
9. ANCHOR BLOCK
10. SCREW
11. WASHER
12. WASHER
13. LOCK
14. WASHER
15. SCREW
16. NUT
17. LOCK NUT
18. LOCK
19. LOCK COVER
20. SCREW
21. SCREW

Figure 2-4.32 Cab Door Lock Components - Installation

g) Coat Hook Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Coat Hook, proceed as follows (Refer to Figure 2-4.33):
  1. Position Coat Hook (4).
  2. Install screw (1), washers (2, 3) and nut (5).
  3. Tighten nut (5) as required to **5 ft-lb (6.8 Nm)**.

h) Visor Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Visor, proceed as follows (Refer to Figure 2-4.33):
  1. If necessary, install the visor support (12) by installing bolts (6) and washers (2, 3).
  2. Position the Visor (7).
  3. Install screws (9), washers (8, 10) and nut (11).
  4. Tighten nuts (11) to **5 lb-ft (6.8 Nm)**.
  5. Check Visor operation and adjust as required.

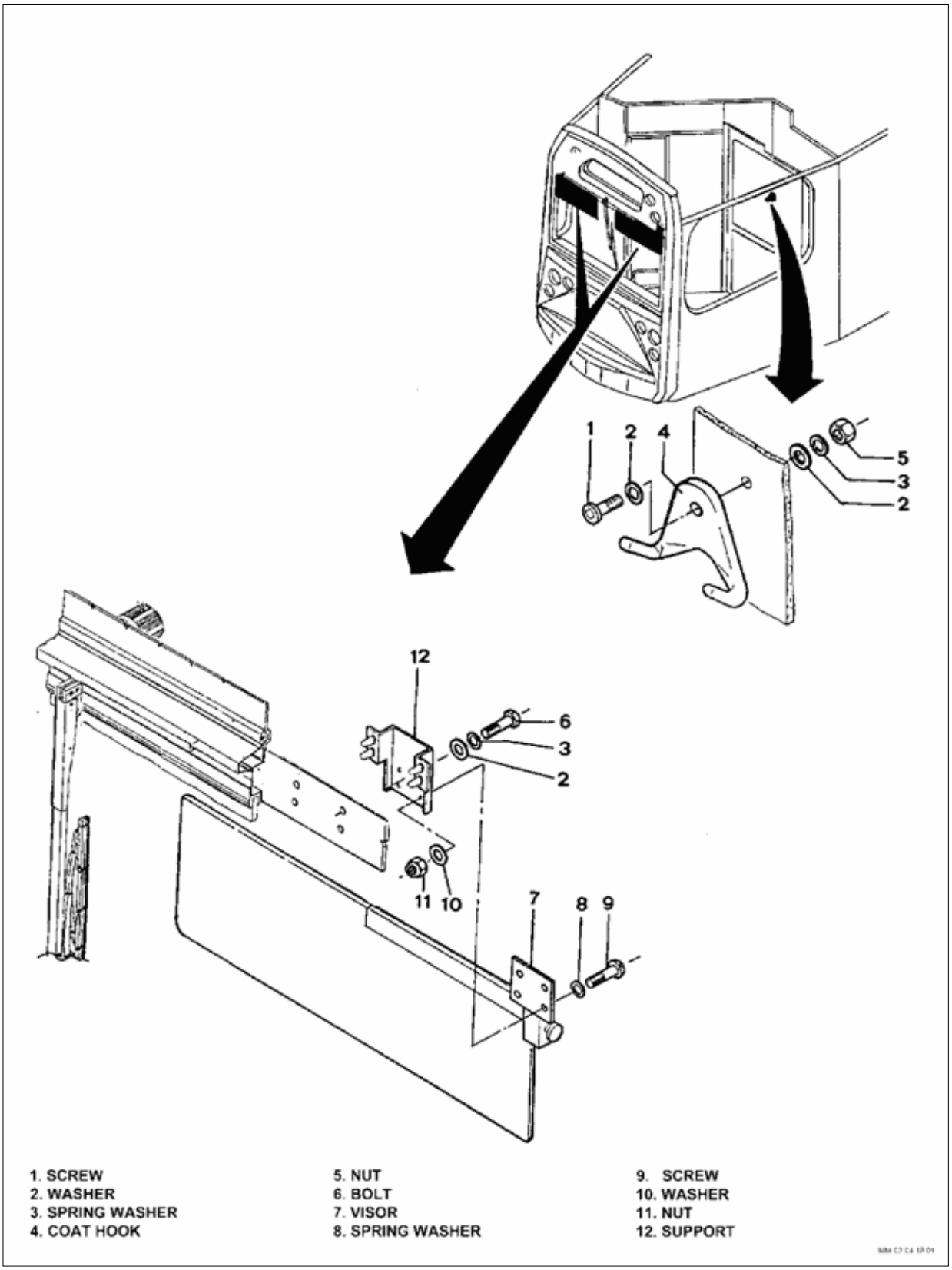


Figure 2-4.33 Visor and Coat Hook - Installation

i) Movable Panels Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Movable Panel, proceed as follows (Refer to Figure 2-4.21):
  1. Position Movable Panels (9, 10, 13, 15, 16).
  2. Using the Maintenance Key, lock the involved panel by closing the related latches.

j) Panel Latches - Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Panel Latch, proceed as follows:
  1. Clean the latch installation seat.
  2. Position the latch and install the attaching parts.
  3. Close the panel using the Maintenance Key. As necessary, adjust Panel Latches clearance (Refer to para 2-4.5.d).

k) Fixed Panels - Typical Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Fixed Panel, proceed as follows:
  1. Position the Fixed Panel involved with molding in proper position.
  2. Install and tighten the related attaching parts.

2-4.4.i Adjustment/Test

a) Panel Latches Adjustment

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Adjust Panel Latches, proceed as follows:
  1. Using the Maintenance Key remove the involved panel.
  2. Insert/remove shim(s) on each latch to adjust the clearance.
  3. Install the panel and check that it closes using the Maintenance Key.

b) Test (Not Applicable)

2-4.5 Cab Console and Panels

2-4.5.a Description and Theory of Operation

The Cab Console and Panels, includes all controls necessary for vehicle operation.

The Cab Console and Panels (Refer to Figure 2-4.34) includes the Operator's Console, the Master Controller, the Communication devices, the Cab Heater with related air diffuser, the Movable Footrest and the Fire Extinguisher.

A Fare Box is located on floor, on the RH side of the Operator's Seat.

For Vehicle Controls, Vehicle Communications and various equipments refer to specific sections.

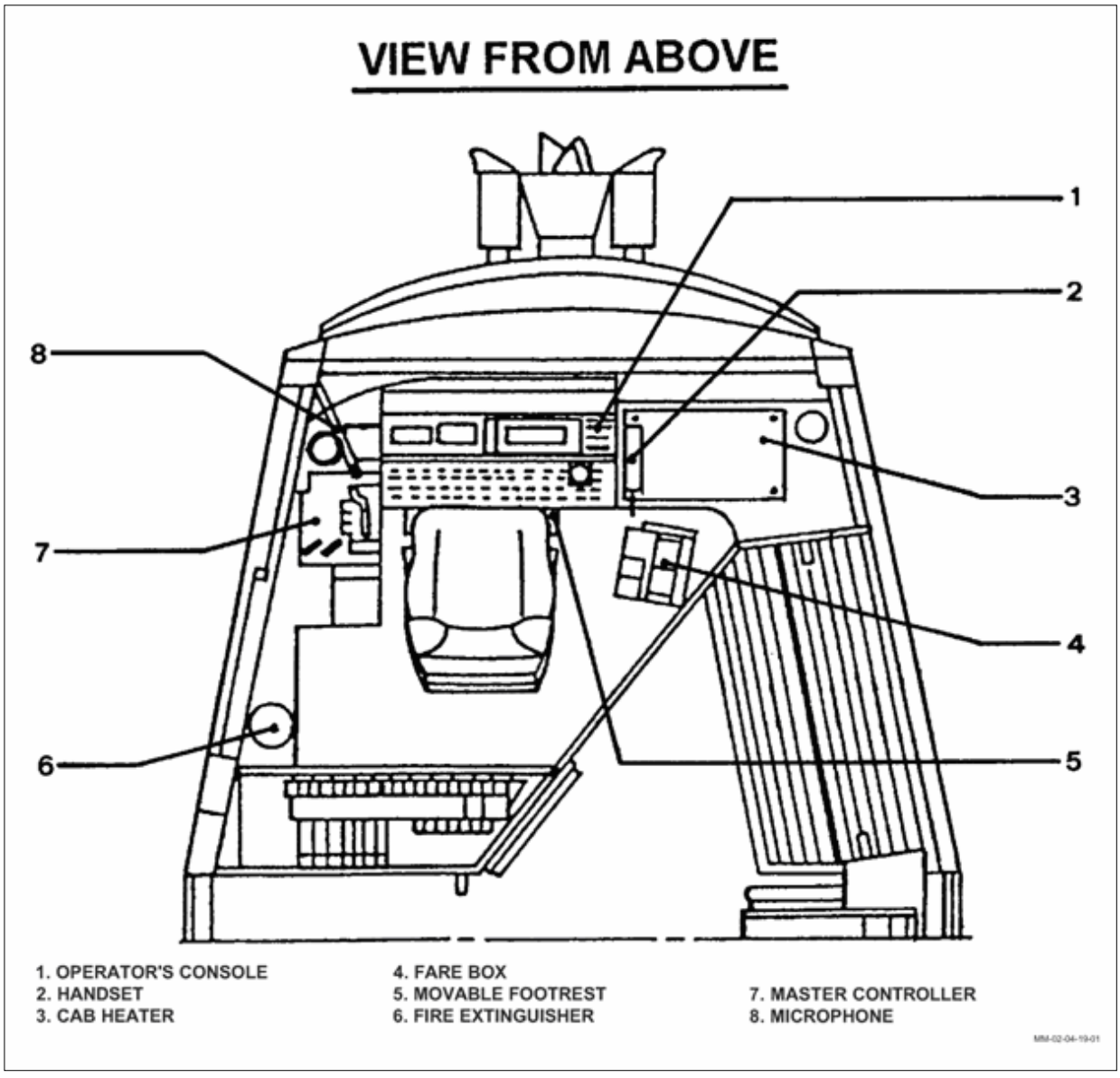


Figure 2-4.34 Cab Console and Panels - Components

2-4.5.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING CAB CONSOLE AND PANELS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

2-4.5.c Fault Isolation

For Cab Console and Panels Fault Isolation, refer to Table 2-4.14.

Table 2-4.14 Cab Console and Panels - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Vibrating noise.	1. Attaching parts of panels are loose/defective. 2. Attaching parts of components are loose/defective.	1. Investigate. Fasten/Replace. 1. Investigate. Fasten/Replace.
2. Overturning Footrest doesn't properly operate.	1. Overturning Footrest hinges defective/ damaged.	1. Investigate. Remove Overturning Footrest (Refer to para 2-4.5.d a)) and replace.

2-4.5.d Disassembly

The Cab Console and Panels Removal procedures consist in the following main operations:

– Movable Footrest Removal.

– Fire Extinguisher Removal.

– Fare Box Removal.

a) Movable Footrest Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Movable Footrest, proceed as follows (Refer to Figure 2-4.35):

  1. Remove the screws (1).
  2. Remove the Footrest (2).
  3. If necessary to remove spring (4) and clamp (5) proceed as follows:
     a. Drill rivets (3, 6) using standard tools as for standard workshop practices.
     b. Remove spring (4) and clamp (5).

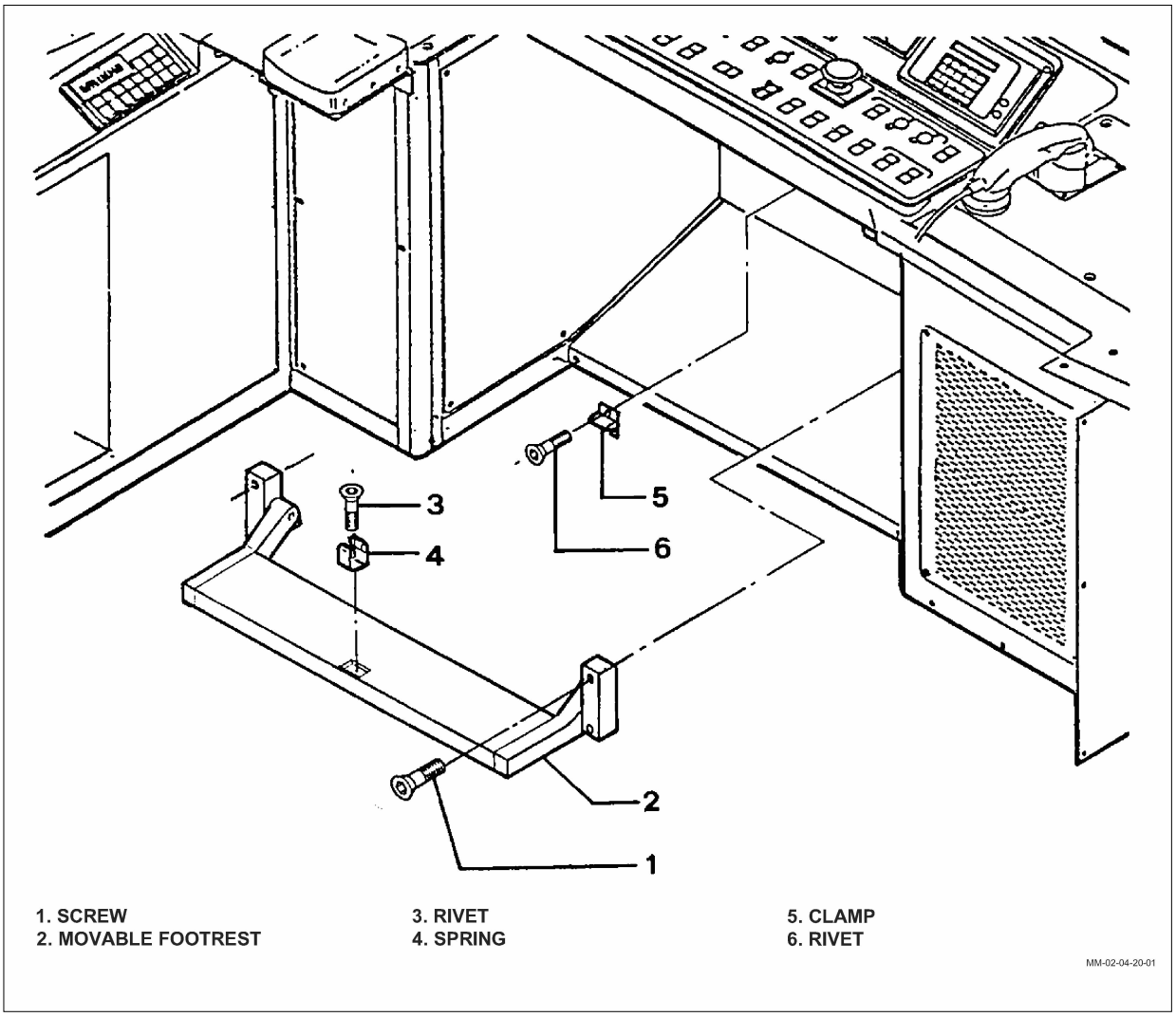


Figure 2-4.35 Movable Footrest - Removal

b) Fire Extinguisher Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Fire Extinguisher and its support, proceed as follows (Refer to Figure 2-4.36):

  1. Open Fire Extinguisher (1) fasteners and remove it.
  2. Remove screws (2, 4).
  3. Remove upper support (3) and lower support (5).

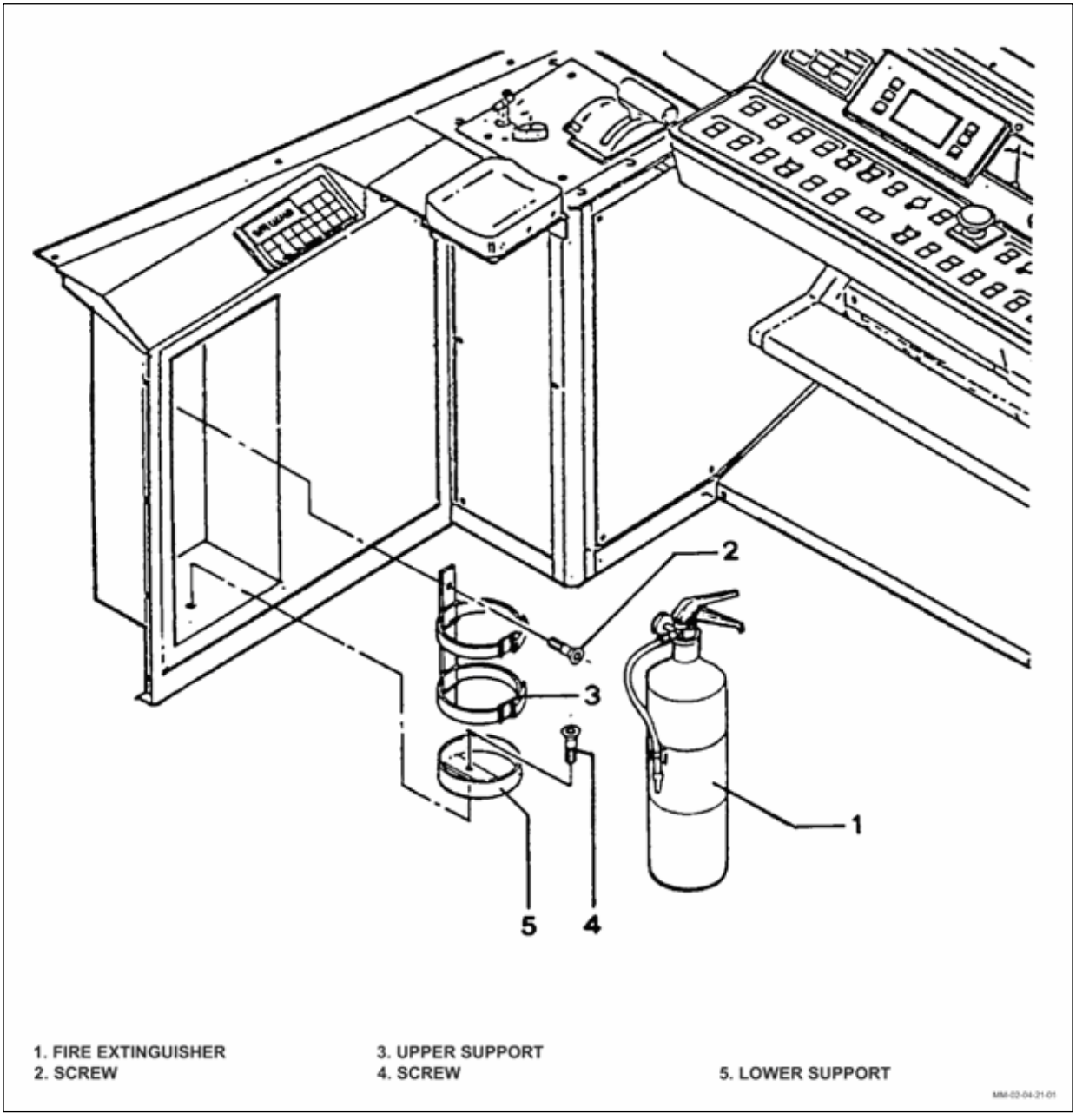


Figure 2-4.36 Fire Extinguisher - Removal

c) Fare Box Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Fare Box, proceed as follows (Refer to Figure 2-4.37):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove screws (8) and the cover (7).
  3. Remove bolts (3, 9) and washers (4, 5).
  4. Lift fare box (1) and disconnect electrical wires from connector (9X09) (6).
  5. Remove the fare box (1) and the spacer (2) leaving in place the Adapter Plate (10).
  6. To remove Adapter Plate (10) proceed as follows:
     a. Remove screws (11).
     b. Remove Adapter Plate (10) & then remove Spacer tube (12) from the floor

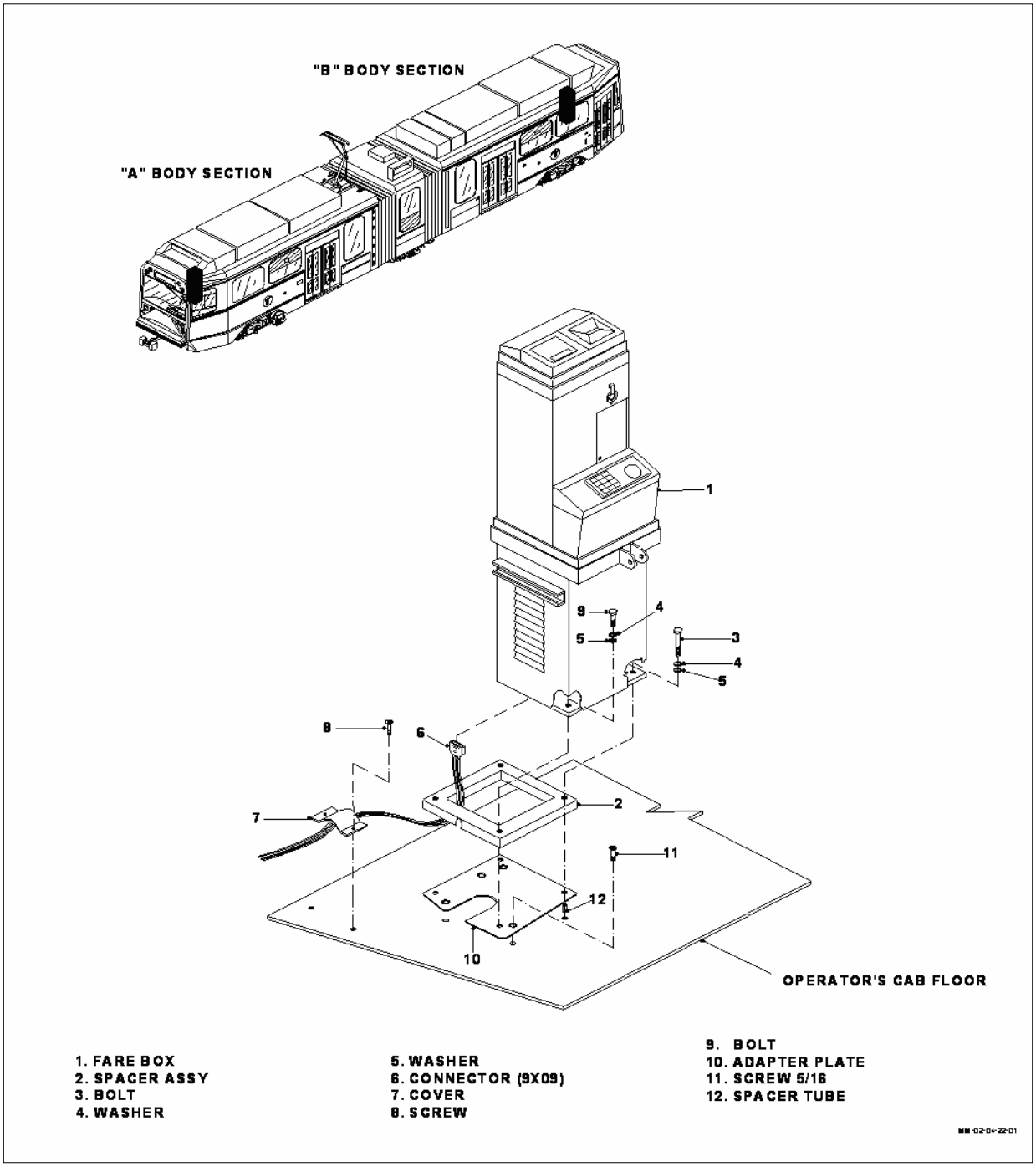


Figure 2-4.37 Fare Box - Removal

2-4.5.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean the Cab Console and Panels components, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the Cab Console and Panels components using neutral detergent and cleaning rags.

b) Painting

For Cab Console and Panels components Painting procedure, refer to para 2-2.e.

2-4.5.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect the Cab Console and Panels, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Cab Console and Panels surfaces for dents, cracks or otherwise damages.
  3. Inspect Cab Console components for correct installation.
  4. Inspect Panels for correct installation.
  5. Inspect Movable Footrest for conditions and correct installation.
  6. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.5.g Repair

- **Sandwich Panels Repair**

  For Sandwich Panels Repair refer to para 2-3.2.g b).

- **Frame Repair**

  Frame not seriously damaged can be repaired using standard tools, as for standard workshop practices.

  Use the following for the repair of Equipment frames

  - Different Welding techniques to repair Equipment frames.
  - Maintain Surface finish of Equipment frames.
  - Maintain the strength and structural integrity of Equipment frame.
  - Remove the sharp edges & burrs of Equipment frames.

2-4.5.h Reassembly

The Cab Console and Panels Installation procedures consist in the following main operations:

– Movable Footrest Installation.

– Fire Extinguisher Installation.

– Fare Box Installation.

a) Movable Footrest Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Movable Footrest, proceed as follows (Refer to Figure 2-4.38):

  1. If necessary install spring (4) and clamp (5) as follows:
     a. Position spring (4) and clamp (5).
     b. Install rivets (3, 6).
  2. Position the Footrest (2).
  3. Install and tighten the screws (1) to **7 lb-ft (9.5 Nm)**.
  4. Check the right operation of the Footrest.

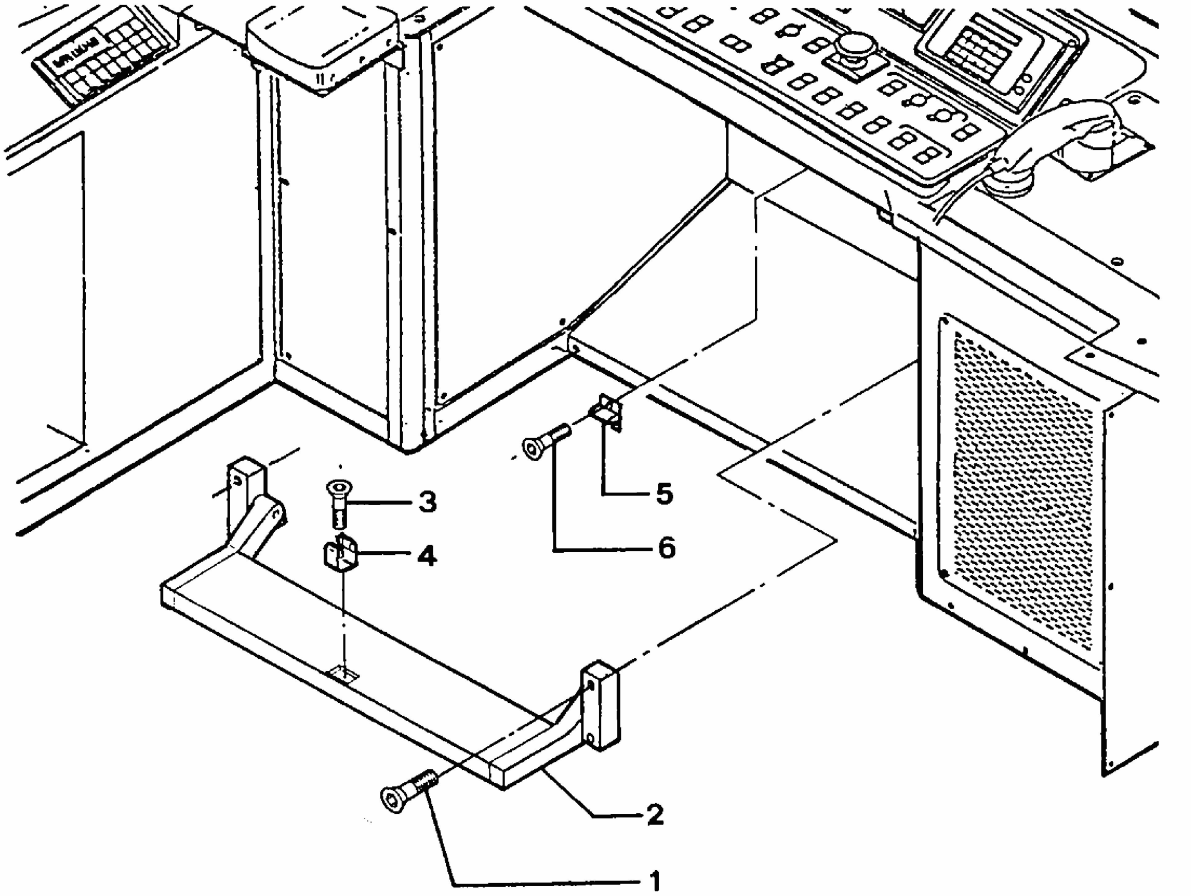


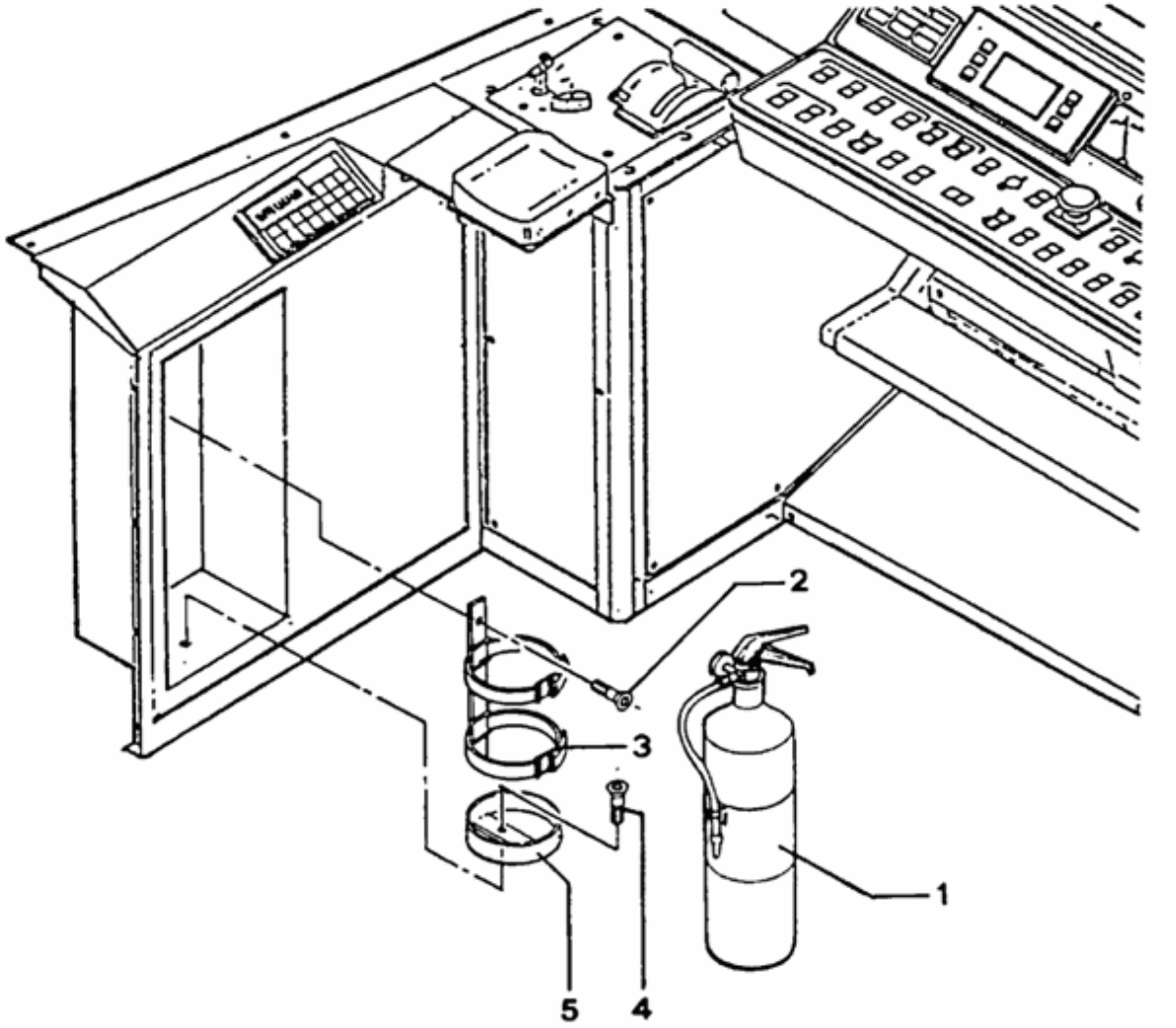
Figure 2-4.38 Movable Footrest - Installation

b) Fire Extinguisher Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install Fire Extinguisher and its support, proceed as follows (Refer to Figure 2-4.39):

  1. Position upper support (3) and lower support (5).
  2. Install the screws (2, 4).
  3. Tighten screws (2, 4) to **7 lb-ft (9.5 Nm)**.



1. FIRE EXTINGUISHER
2. SCREW
3. UPPER SUPPORT
4. SCREW
5. LOWER SUPPORT

MM-02-04-21-01

4. Install the fire Extinguisher (1) and close the fasteners.

Figure 2-4.39 Fire Extinguisher - Installation

c) Fare Box Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

  To Install the Fare Box, proceed as follows (Refer to Figure 2-4.40):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. To install Adapter Plate (10) proceed as follows:
     a. Insert the Spacer tube(12), locatite 242 (N.I) in floor and Position Adapter Plate (10).
     b. Install and tighten screws (11) to **14 lb-ft (19 Nm)**.
  3. Position the spacer (2) on the Adapter Plate (10).
  4. Position the fare box (1).
  5. Connect electrical wires to the connector (9X09) (6) as follows:
     a. Wire 90204 to pin 1.
     b. Wire 90205 to pin 4.
  6. Install the washers (4, 5) and bolts (3, 9).
  7. Tighten bolts (3, 9) to **14 lb-ft (19 Nm)**.
  8. Position the cover (7) and tighten screws (8).

2-4.5.i Adjustment/Test (Not Applicable)

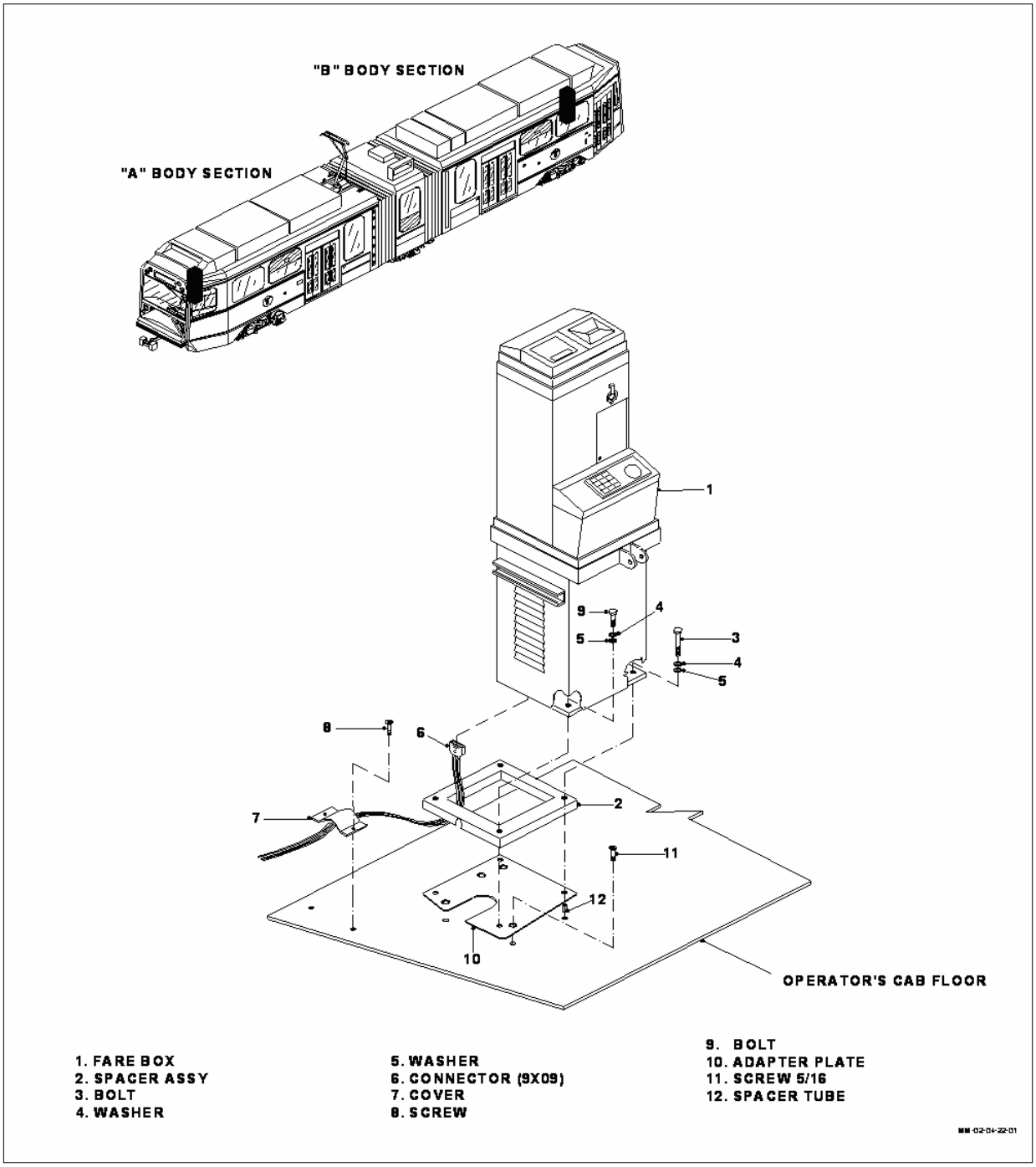


Figure 2-4.40 Fare Box - Installation

2-4.6 Windshield Heater System

2-4.6.a Description and Theory of Operation

The vehicle is provided with two separate Windshield Heater System (Refer to Figure 2-4.41), one per each operator cab.

Each system allows the windshield defrosting/defogging through the electric heaters build in the windshield.

The Windshield Heater System main components are the Heaters (windshield), the Transformer (6T01) located under console, the Heater Relay (6K06) located in the electric rack, the DEFROSTER Switch (6Q04) and the HEATED WINDSHIELD Indicator Light (Annunciator panel) located on the Operator Console.

The system is powered at 230 Vac through the WINDSHIELD HEATER (6Q03) Circuit Breaker located on the Auxiliary Voltage CB panel (operator cab).

For Windshield Description, Operation and Maintenance procedures refer to para.2-2.5.2

The Windshield Heater System main components are the Heaters (windshield), the Transformer (6T01) located under console, the Heater Relay (6K06) located in the electric rack, the DEFROSTER Switch (6Q04) and the HEATED WINDSHIELD Indicator Light (Annunciator panel) located on the Operator Console.

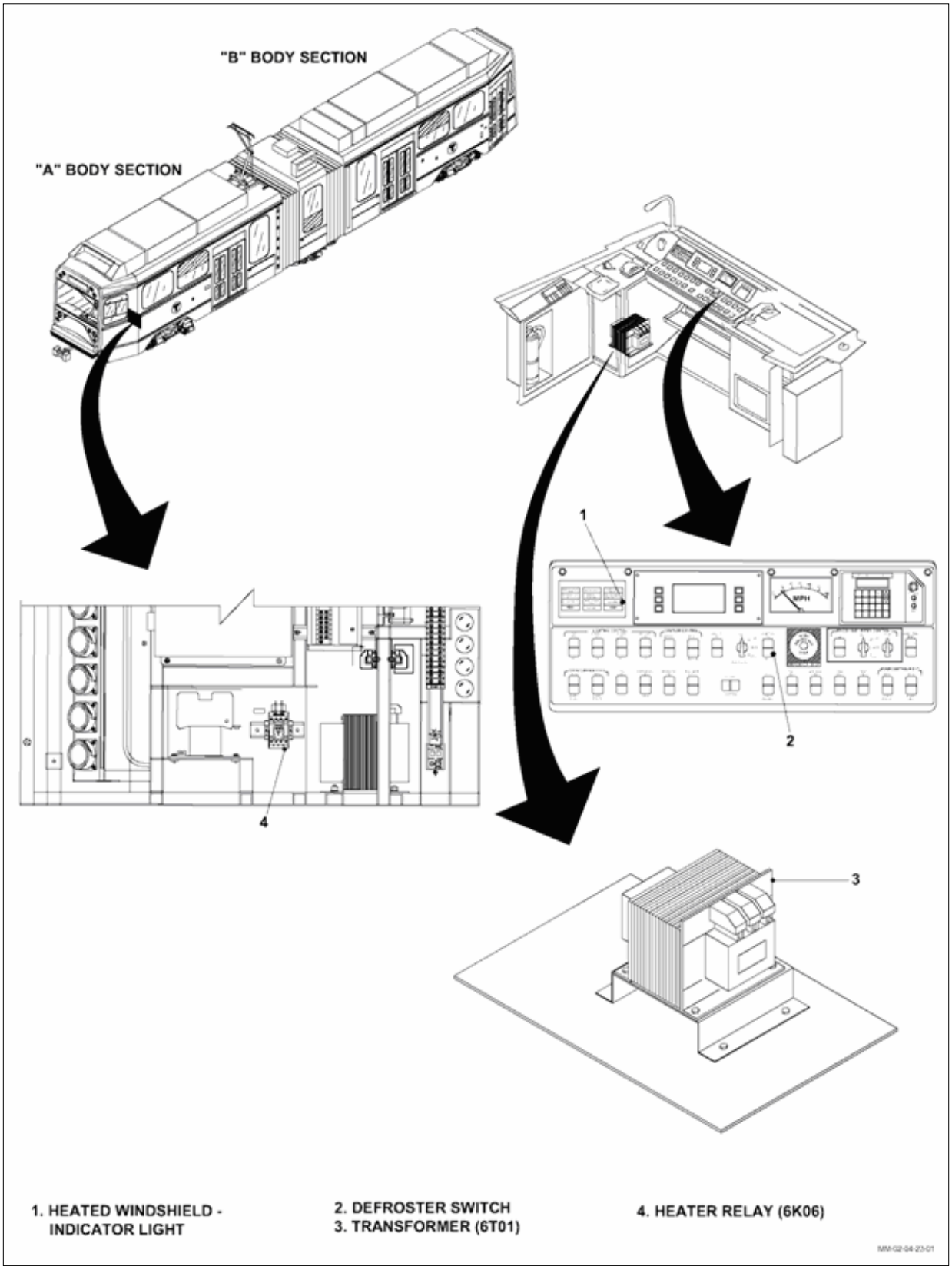


Figure 2-4.41 Windshield Heater System – Components Location

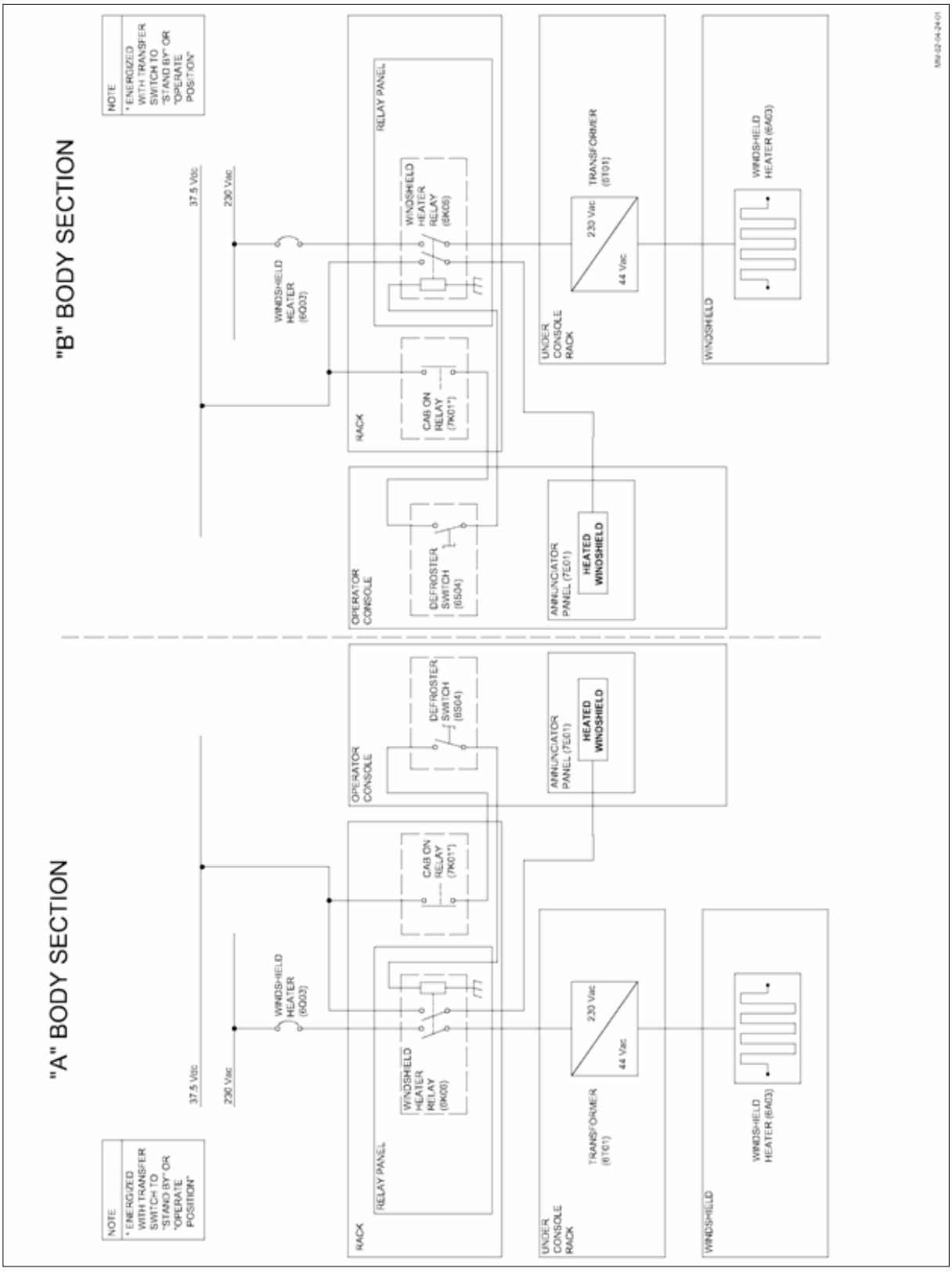


Figure 2-4.42 Windshield Heater System – Electrical Schematic

2-4.6.b Specific Safety Precautions

> **WARNING:** **BEFORE PERFORMING WINDSHIELD HEATER SYSTEM COMPONENTS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
> **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

2-4.6.c Fault Isolation

For Windshield Heater System Fault Isolation, refer to Table 2-4.15.

Table 2-4.15 Windshield Heater System - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Windshield Heater System does not operate.	1. WINDSHIELD HEATER Circuit Breaker (6Q03) open.	1. Close 6Q03 CB.
	2. Electrical connection faulty.	1. Restore electrical connections (Refer to SDM DWG R12400200, sheet 88).
	3. Windshield Heater Relay (6K06) faulty.	1. Replace Relay (Refer to para 2-4.6.d b)).
	4. Transformer (6T01) faulty.	1. Replace Transformer (6T01) (Refer to para 2-4.6.d a)).
	5. DEFROSTER Switch (6S04) faulty.	1. Replace Switch (Refer to 2-4.6.d c)).
	6. Windshield electrical wire(s) (No. 60406 and 60407) disconnects.	1. Connect electrical wire(s) (Refer to para 2-2.5.2.h)
	7. Windshield Heater Elements (6A03) broken.	1. Replace Windshield (Refer to para 2-2.5.2.d).

2-4.6.d Disassembly

The Windshield Heater System Components Removal procedures consist in the following main operations:

– Transformer Removal.

– Heater Relay Removal.

– DEFROSTER Switch Removal.

– HEATED WINDSHIELD Indicator Light Removal.

a) Transformer Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Transformer, proceed as follows (Refer to Figure 2-4.43):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove Under Console Cover Panel (1) by removing the related screws.
  3. Locate Transformer (2) to be removed.
  4. Disconnect wires form Transformer.
  5. Remove Bolts (3), Washers (4, 5) and Nuts (6).
  6. Remove Transformer (2).

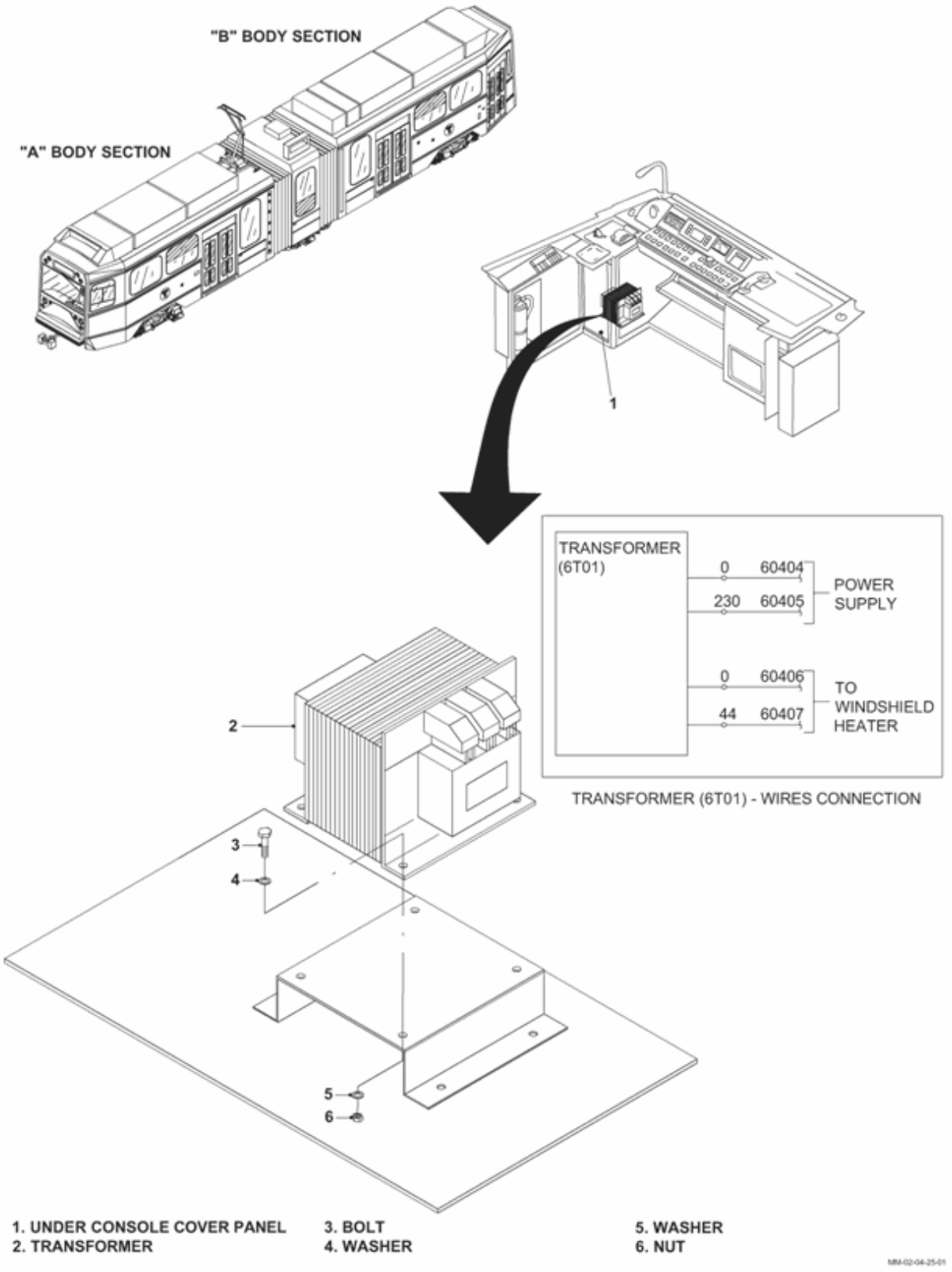


Figure 2-4.43 Transformer – Removal

b) Heater Relay Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Heater Relay (6K06), proceed as follows (Refer to Figure 2-4.44):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Operate from operator cab side, remove Rack Lower Panel (4) using the Maintenance Key.
  3. Locate Heater Relay (6K06) (3).
  4. Disconnect wires from relay terminal by loosening mounting screws. Make note of cable code/color.
  5. Loose screws (2) and pull out Relay (3) from mounting rail.

c) DEFROSTER Switch Removal

For DEFROSTER Switch Removal refer to SMOM Section 7.

d) HEATED WINDSHIELD Indicator Light Removal

For HEATED WINDSHIELD Indicator Light Removal refer to SMOM Section 7.

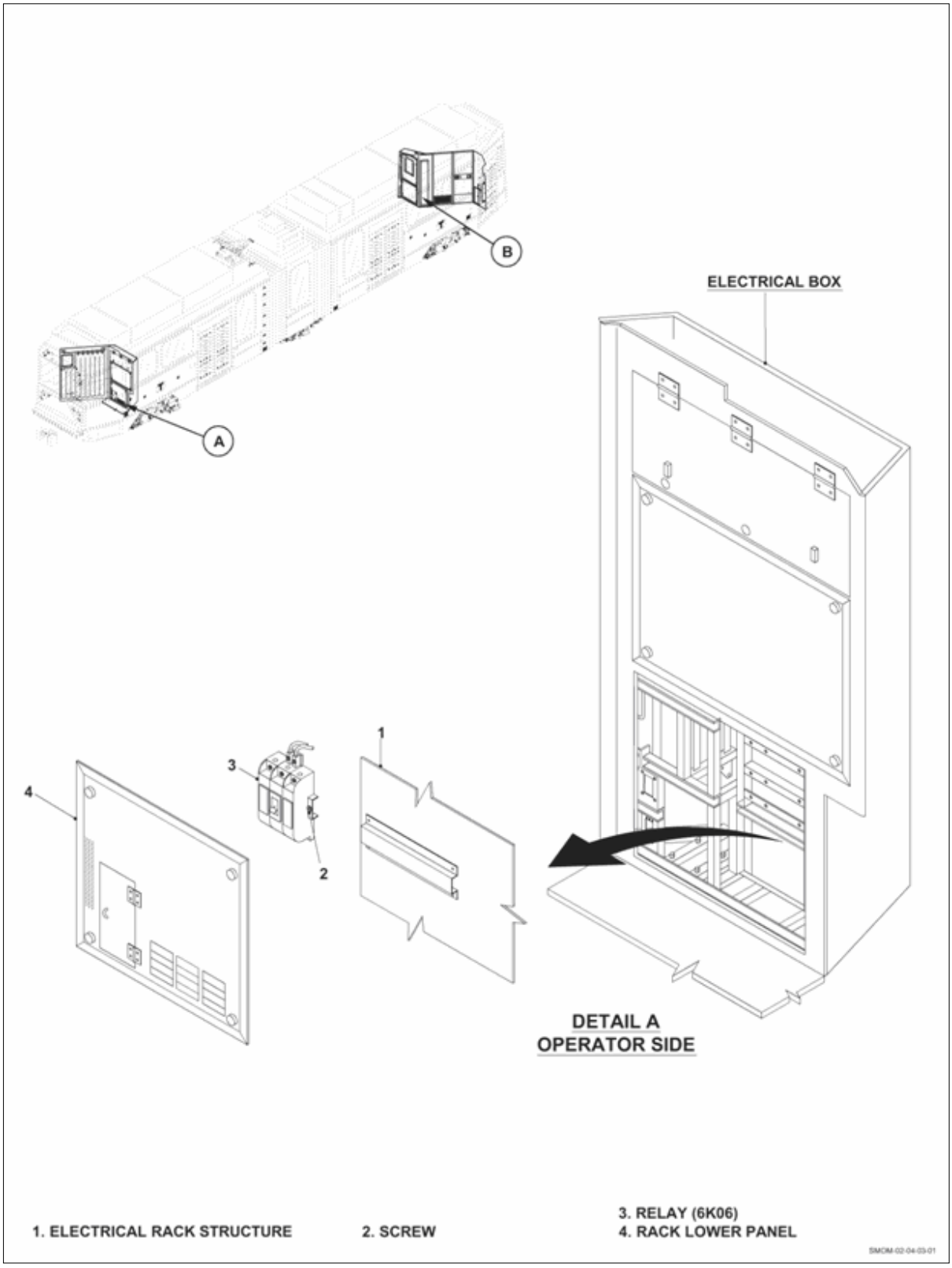


Figure 2-4.44 Heater Relay – Removal

2-4.6.e Cleaning/Painting

a) Transformer Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean the Transformer, proceed as follows:

  1. Clean transformer using vacuum cleaner.

b) Painting (Not Applicable)

2-4.6.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Windshield Heater System Components proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Transformer (6T01) for loose / missing hardware and correct installation.
  3. Inspect Transformer (6T01) for damaged insulation, loose terminals or signs of overheating.
  4. Inspect Transformer Terminal board for damages, cracks, burns / missing hardware and correct installation.
  5. Inspect electrical wires for damaged insulation, loose terminals or signs of overheating.
  6. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-4.6.g Repair

Windshield Heater System is repaired by replacing the damaged components.

2-4.6.h Reassembly

The Windshield Heater System Components Installation procedures consist in the following main operations:

– Transformer Installation.
– Heater Relay Installation.
– DEFROSTER Switch Installation.
– HEATED WINDSHIELD Indicator Light Installation.

a) Transformer Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Install Transformer, proceed as follows (Refer to Figure 2-4.45):

1. Check that the vehicle is in safety conditions.
2. Position Transformer (2).
3. Install Bolts (3) Washers (4, 5) and Nuts (6).
4. Tighten Nuts (7) to **7 lb-ft (9,5 Nm)**.
5. Connect wires to the transformer as shown in the figure.
6. Install Under Console Cover Panel (1) and lock it installing the related mounting screws.

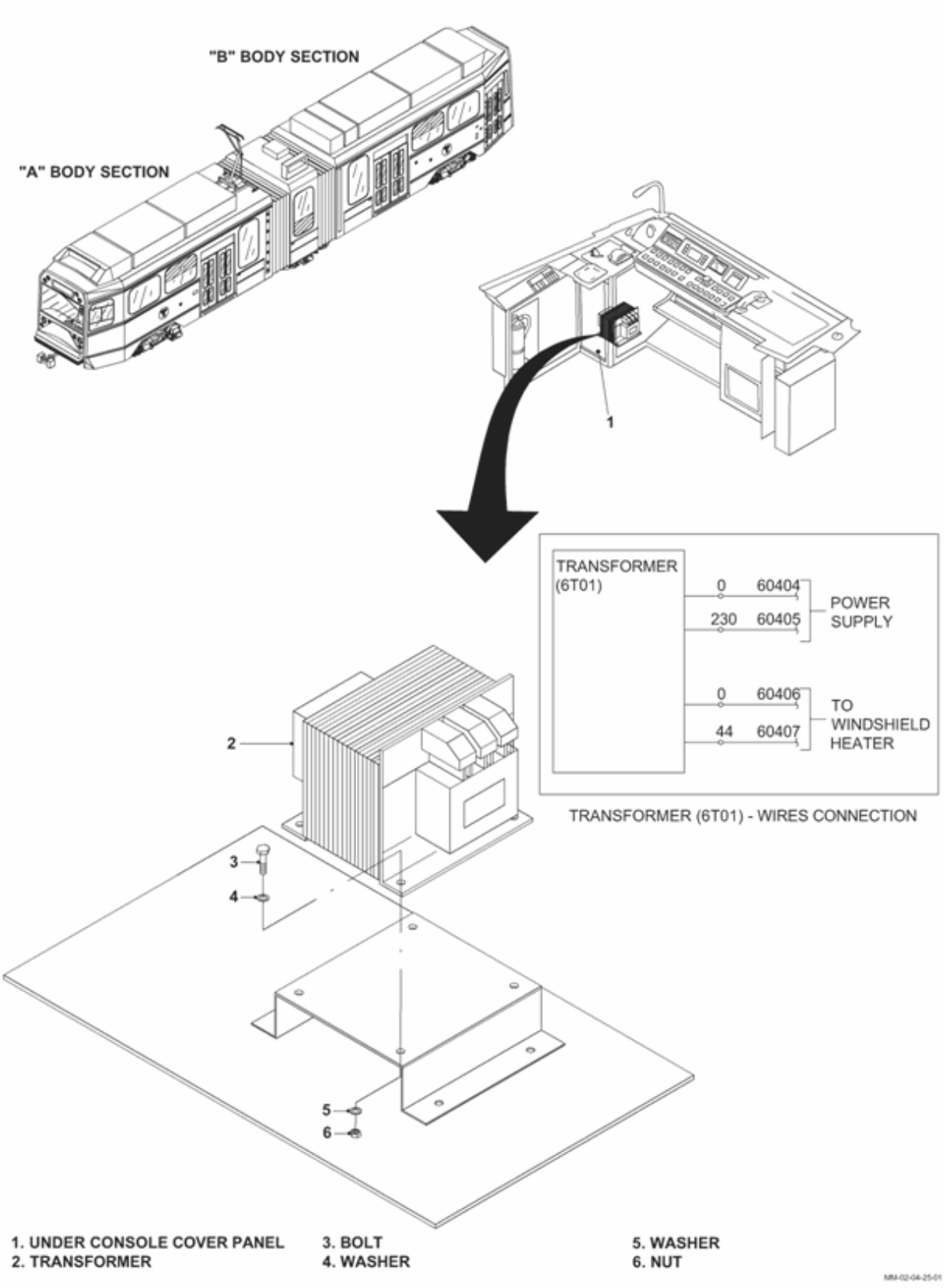


Figure 2-4.45 Transformer – Installation

b) Heater Relay Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Maintenance Key.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Heater Relay (6K06), proceed as follows:

  1. Check that the vehicle is in safety conditions.
  2. Position relay on the mounting rail and lock it by tightening screws (2).
  3. Connect wires to the relay as follows:
     a. wire 60401 to A1 terminal;
     b. wire 60408 to A2 terminal;
     c. wire 60403 to L1 terminal;
     d. wire 60402 to L2 terminal;
     e. wire 70602 to L3 terminal;
     f. wire 60404 to T1 terminal;
     g. wire 60405 to T2 terminal;
     h. wire 70608 to T3 terminal;
  4. Close Rack Lower Panel (4) using Maintenance Key.

c) DEFROSTER Switch Installation

For DEFROSTER Switch Installation refer to SMOM Section 7.

d) HEATED WINDSHIELD Indicator Light Installation

For HEATED WINDSHIELD Indicator Light Installation refer to SMOM Section 7.

2-4.6.i Adjustment/Test (Not Applicable)

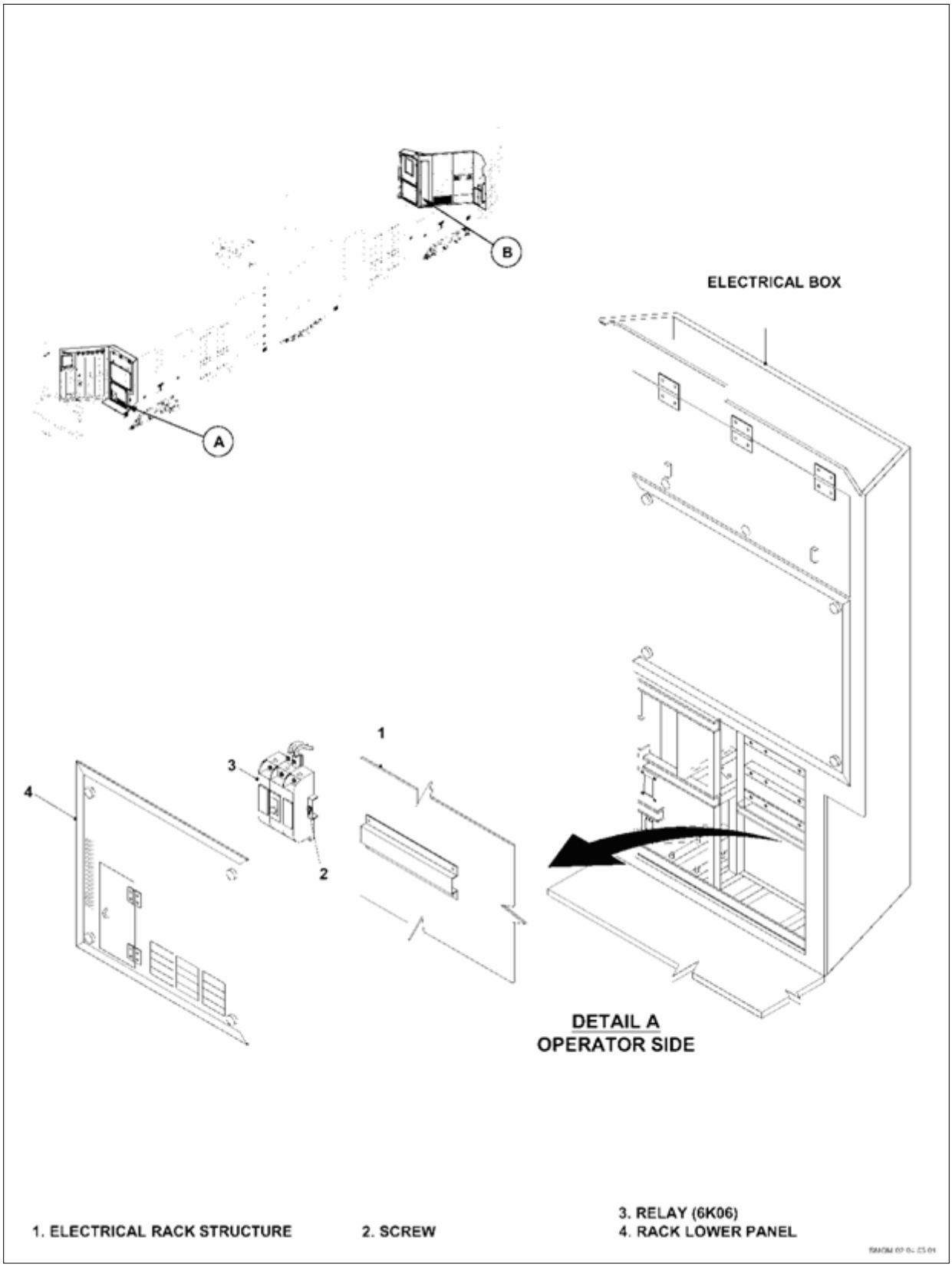


Figure 2-4.46 Heater Relay – Installation

2-5 Articulation Section "C"

2-5.a Description and Theory of Operation

The vehicle is provided with an Articulation Section "C" as a connecting element between the two Car Body Sections "A" and "B". The Articulation Section "C" allows passengers safe access from section to section, and is watertight.

The Articulation Section "C" structure is connected by bolts to the trailer truck, which is semipermanently coupled to the Car Body Sections "A" and "B" (Refer to Figure 2-5.1).

The back ends of section "A" and "B" are connected to the trailer truck by strong support and load the trailer truck spherical connections which allow movement of the Articulation Section "C" in turns, uphill and downhill of the vehicle.

The Articulation Section "C" is equipped with ceiling and side panels to provide passenger safety and to maximize ease of passenger access from one car body section to the other within a vehicle, without doors. The Articulation Section "C" assemblies are: Structure, Bellows, Upper Linkage, Roof Traction Cable, Floor, Liners and Ceiling Panels, Seats, and Stanchions and Handrails.

The articulation mechanism has sufficient strength to resist dynamic buffing loads at least as great as the adjacent car body sections so that in the event of collision, the articulation mechanism will not be the first structure to fail. The articulation joint and its attachment provide anti-climbing and anti-telescoping protection.

NOTE: For Articulation Section Windows Description, Operation and Maintenance procedures, refer to para 2-2.5.

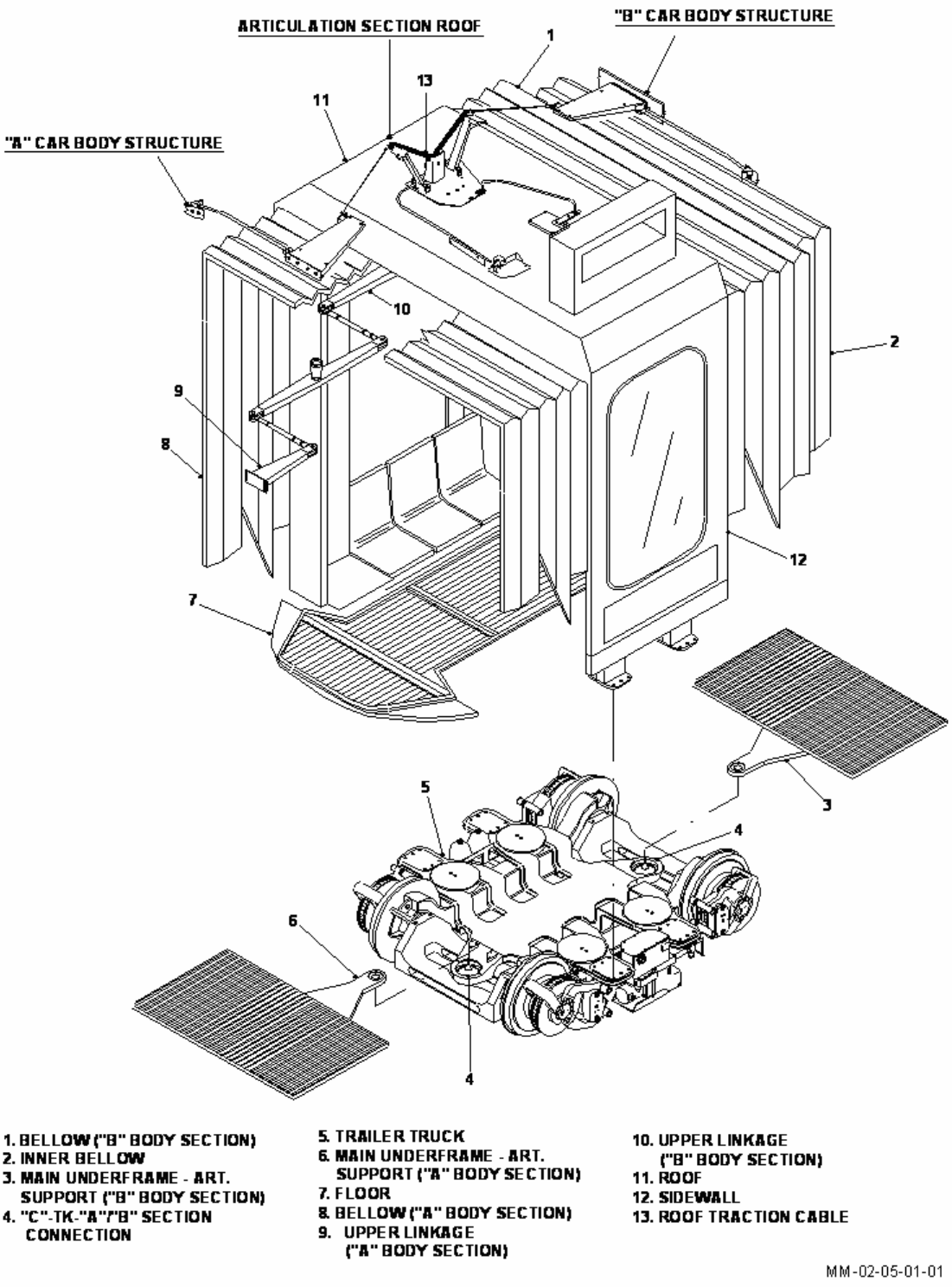


Figure 2-5.1 Articulation Section "C" Assemblies - Location

2-5.b Specific Safety Precautions

Since the Articulation Section “C” consists of separate items, the Specific Safety Precautions is described in the para(s) related to each items.

2-5.c Fault Isolation

Since the Articulation Section "C" consists of separate items, the Fault Isolation is described in the para(s) related to each item, as shown in Table 2-5.1.

Table 2-5.1 Articulation Section "C" Components - Fault Isolation

COMPONENTS	REFERENCE (Para)
Structure	Not Applicable
Interiors	Not Applicable
Bellows	2-5.3.c
Floor	2-5.4.c
Upper Linkage	2-5.5.c
Roof Traction Cable System	2-5.6.c

2-5.d Disassembly

Since the Articulation Section "C" consists of separate items, the Disassembly is described in the para(s) related to each item, as shown in Table 2-5.2.

Table 2-5.2 Articulation Section "C" Components - Disassembly

COMPONENTS	REFERENCE (Para)
Structure	Not Applicable
Interiors	2-5.2.d
Bellows	2-5.3.d
Floor	2-5.4.d
Upper Linkage	2-5.5.d
Roof Traction Cable System	2-5.6.d

2-5.e Cleaning/Painting

Since the Articulation Section "C" consists of separate items, the Cleaning/Painting is described in the para(s) related to each item, as shown in Table 2-5.3.

Table 2-5.3 Articulation Section "C" Components - Cleaning/Painting

COMPONENTS	CLEANING REFERENCE (Para)	PAINTING REFERENCE (Para)
Structure	2-5.1.e a)	2-5.1.e b)
Interiors	2-5.2.e a)	Not Applicable
Bellows	2-5.3.e a)	Not Applicable
Floor	2-5.4.e a)	Not Applicable
Upper Linkage	2-5.5.e a)	Not Applicable
Roof Traction Cable System	2-5.5.e a)	Not Applicable

2-5.f Inspection

Since the Articulation Section "C" consists of separate items, the Inspection is described in the para(s) related to each item, as shown in Table 2-5.4.

Table 2-5.4 Articulation Section "C" Components - Inspection

COMPONENTS	REFERENCE (Para)
Structure	2-5.1.f
Interiors	2-5.2.f
Bellows	2-5.3.f
Floor	2-5.4.f
Upper Linkage	2-5.5.f
Roof Traction Cable System	2-5.6.f

2-5.g Repair

Since the Articulation Section "C" consists of separate items, the Repair is described in the para(s) related to each item, as shown in Table 2-5.5.

Table 2-5.5 Articulation Section "C" Components - Repair

COMPONENTS	REFERENCE (Para)
Structure	2-5.1.g
Interiors	2-5.2.g
Bellows	2-5.3.g
Floor	2-5.4.g
Upper Linkage	2-5.5.g
Roof Traction Cable System	2-5.6.g

2-5.h Reassembly

Since the Articulation Section "C" consists of separate items, the Reassembly is described in the para(s) related to each item, as shown in Table 2-5.6.

Table 2-5.6 Articulation Section "C" Components - Reassembly

COMPONENTS	REFERENCE (Para)
Structure	Not Applicable
Interiors	2-5.2.h
Bellows	2-5.3.h
Floor	2-5.4.h
Upper Linkage	2-5.5.h
Roof Traction Cable System	2-5.6.h

2-5.i Adjustment/Test

Since the Articulation Section "C" consists of separate items, the Adjustment/Test is described in the para(s) related to each item, as shown in Table 2-5.7.

Table 2-5.7 Articulation Section "C" Components - Adjustment/Test

COMPONENTS	REFERENCE (Para)
Structure	Not Applicable
Interiors	Not Applicable
Bellows	Not Applicable
Floor	Not Applicable
Upper Linkage	Not Applicable
Roof Traction Cable System	Not Applicable

2-5.1 Structure

2-5.1.a Description and Theory of Operation

The Articulation Section "C" is a structural assembly designed to have the required stress resistance and to support AW3 passenger loads with no permanent deformations over the vehicle's life.

The Articulation Section "C" structure (Refer to Figure 2-5.2) consists of the Side Walls (1, 3), the Roof (2) and the Main Underframe welded together. The Articulation Section "C" structure is joined with the Trailer Truck by bolts.

Twenty-four bolts (5) (Hex - 3/4" in. DIA - 3 in. length), connect the Articulation Section "C" to the four supports welded on the trailer truck.

The Main Underframe consists of two longitudinal frames (RH and LH).

The Articulation Section "C" Structure is completed at both ends by angular walls welded to the longitudinal frames and to the Roof structure. The structure components, are made with CORTEN B steel welded together.

Onto each longitudinal underframe is installed a fiberglass box by screws.

The Articulation Section "C" floor is installed over the truck and on the fiberglass box by rivet nuts and moldings. Inside panels (ceiling panels, angular walls and side panels) are fixed the structure by moldings and screws.

The Articulation Section is equipped with one Fixed Window per side

The Windows are made with single density, safety laminated sheet glass supported directly by the Articulation Section structure with neoprene glazing gasket.

The glazing sections are designed to make a watertight seal without the need for sealing compounds.

The glass of the Windows is tinted. The Window assemblies are provided with light alloy frames installed on the vehicle's structure.

Individual side windows are interchangeable with windows of the same side of A or B Sections.

Refer to para 2-2.7 for detailed Overhaul Maintenance Procedures.

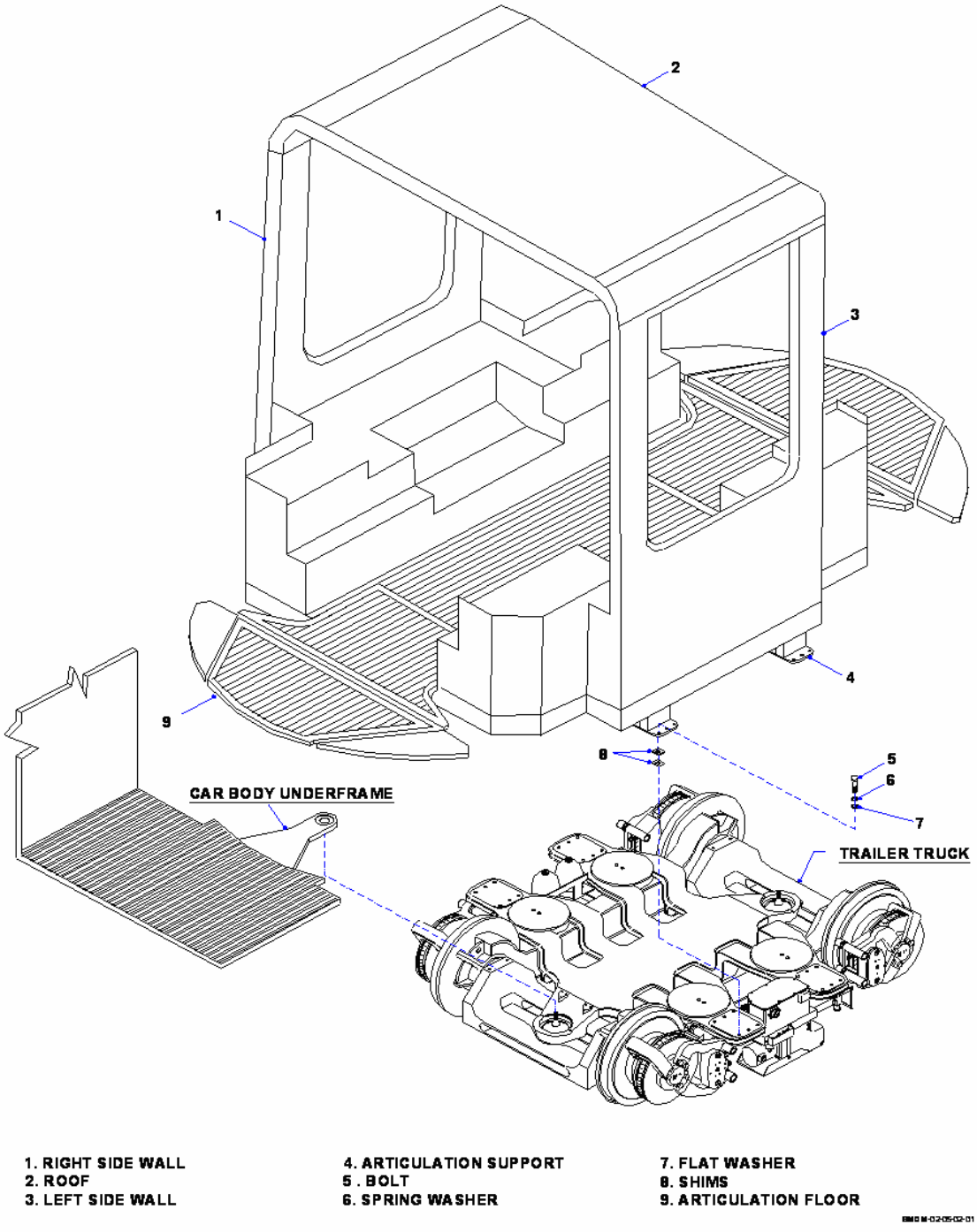


Figure 2-5.2 Structure of Articulation Section "C" - Components

2-5.1.b Specific Safety Precautions

WARNING:	**BEFORE PERFORMING ARTICULATION SECTION STRUCTURE MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.** **IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.**

WARNING:	**THE TRAILER TRUCK AXLES ARE NOT GROUNDED. DURING THE MAINTENANCE OPERATIONS ENSURE THAT:** **THE AXLES ARE ELECTRICALLY ISOLATED FROM THE CAR BODY FRAME AND THE TRACK.**

WARNING:	**DIRECT CONTACT WITH UNGROUNDED WHEEL SET ASSEMBLY CAN PRODUCE POTENTIAL HAZARDOUS EFFECT ON THE PEOPLE DURING MAINTAINENCE ACTIVITIES**

2-5.1.c Fault Isolation (Not Applicable)

2-5.1.d Disassembly

The Articulation Section Structure assemblies are joined by welding. When it is necessary to operate on a structure assembly, the operation may not be made until the Car Builder Engineering Dpt. evaluation is completed, and repair parameters and procedures established.

2-5.1.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

WARNING:	**THE TRAILER TRUCK AXLES ARE NOT GROUNDED. DURING THE MAINTENANCE OPERATIONS ENSURE THAT:** **THE AXLES ARE ELECTRICALLY ISOLATED FROM THE CAR BODY FRAME AND THE TRACK.**

To Clean the Articulation Structure, proceed as follows:

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Box, Angular Walls, Side and Ceiling Panels:
   a. Clean Box, Angular Walls, Side and Ceiling Panels using cleaning rags and compressed air.
3. For Stanchions and Handrails refer to para 2-3.1.
4. For Passenger Seats refer to para 2-3.4.
5. Vacuum clean the structure using compressed air.

b) Painting

For Articulation Section "C" structure painting procedure, refer to para 2-2.e.

2-5.1.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

WARNING:	**THE TRAILER TRUCK AXLES ARE NOT GROUNDED. DURING THE MAINTENANCE OPERATIONS ENSURE THAT:** **THE AXLES ARE ELECTRICALLY ISOLATED FROM THE CAR BODY FRAME AND THE TRACK.**

To Inspect Articulation Section Structure Components, proceed as follows:

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Inspect Articulation Section Structure components for damage and correct installation.
3. Inspect paint for damage / corrosion.
4. Inspect structures for cracks, dents or otherwise damages.
5. Inspect the vehicle systems equipment for correct installation.
6. Verify that loose or damaged cables are not in contact or have not possibilty come into contact with the trailer truck axle assemblies.
7. Inspection results must be recorded on Defect report Cards, to allow the planning of Maintenance Operations.

2-5.1.g Repair

The Car Body "C" Structure is designed to have no structural stress during the vehicle's operating life. For this reason, in normal service conditions it will be necessary to operate on the Car Body "C" structure only for repair operations related to railroad accident/damages.

When a structural damage is diagnosed/detected, the repair may not be made until a Car Builder Engineering Dpt. evaluation is completed, and repair parameters an procedures are established.

Small repairs are possible using standard tools, as in standard workshop practice.

For structure minor repair refer to para 2-2.3.g.

2-5.1.h Reassembly (Not Applicable)

2-5.1.i Adjustment/Test

The structure's assemblies are designed to not require Adjustment/Test during vehicle operating life.

For Vehicle Leveling Procedure, refer to Section 10, para 10-5.

2-5.2 Interiors

2-5.2.a Description and Theory of Operation

The Articulation Section "C" is equipped with Angular Walls Panels, Ceiling Panels, Side Panels and Fiberglass Boxes (Refer to Figure 2-5.3) to hide the structure and to provide comfort to the passengers. The sealant (DOW CORNING 197 Type) is used to fill the gap between the fiberglass boxes and the articulation frame.

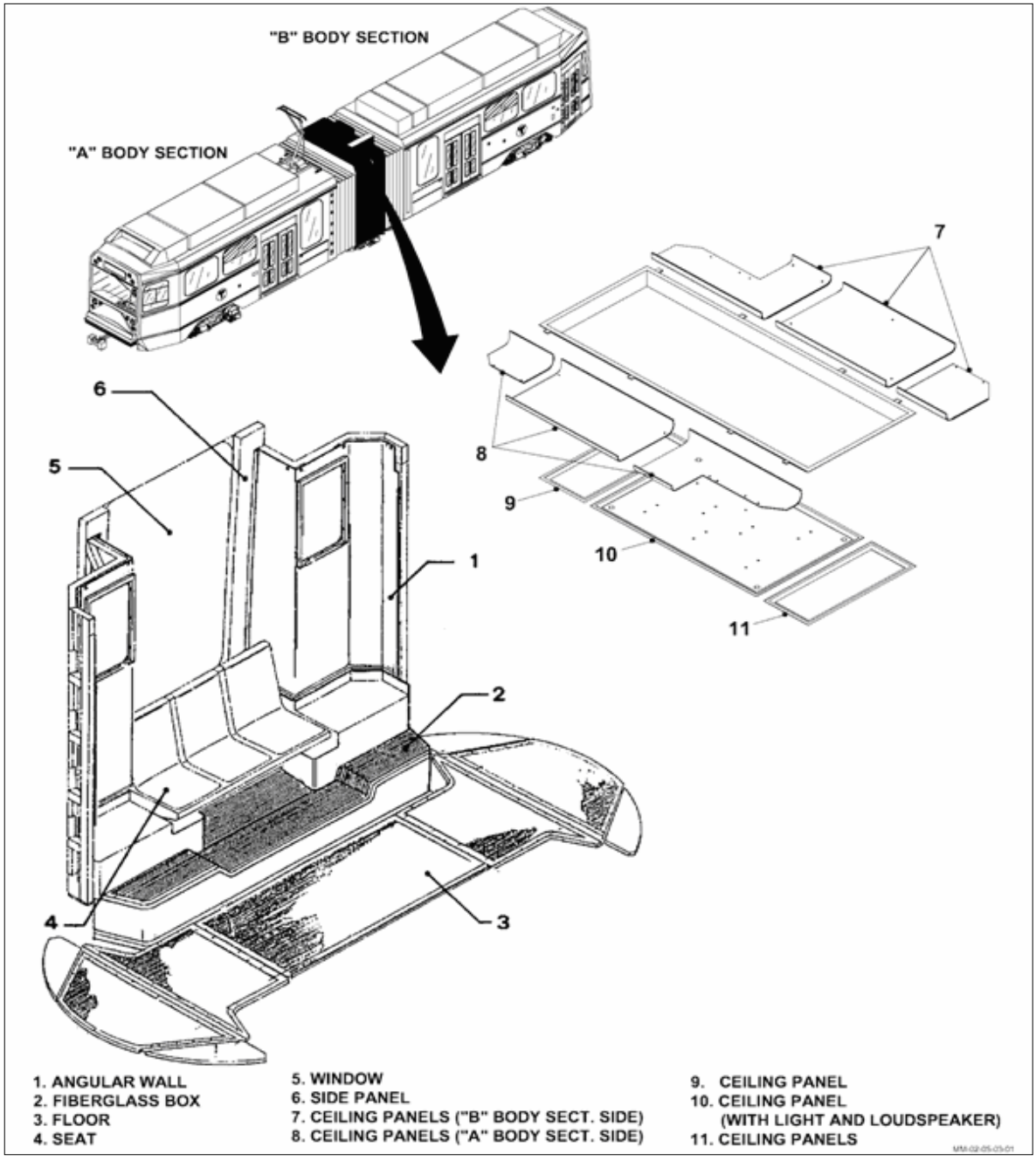


Figure 2-5.3 Liners and Ceiling Panels - Components

2-5.2.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING ARTICULATION SECTION LINERS AND CEILING PANELS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

2-5.2.c Fault Isolation (Not Applicable)

2-5.2.d Disassembly

The Articulation Section Interiors Removal procedures consist in the following main operations:

– Angular Wall Panel - Typical Removal.
– Ceiling Panel - Typical Removal.
– Liners – Typical Removal.
– Fiberglass Box Removal.

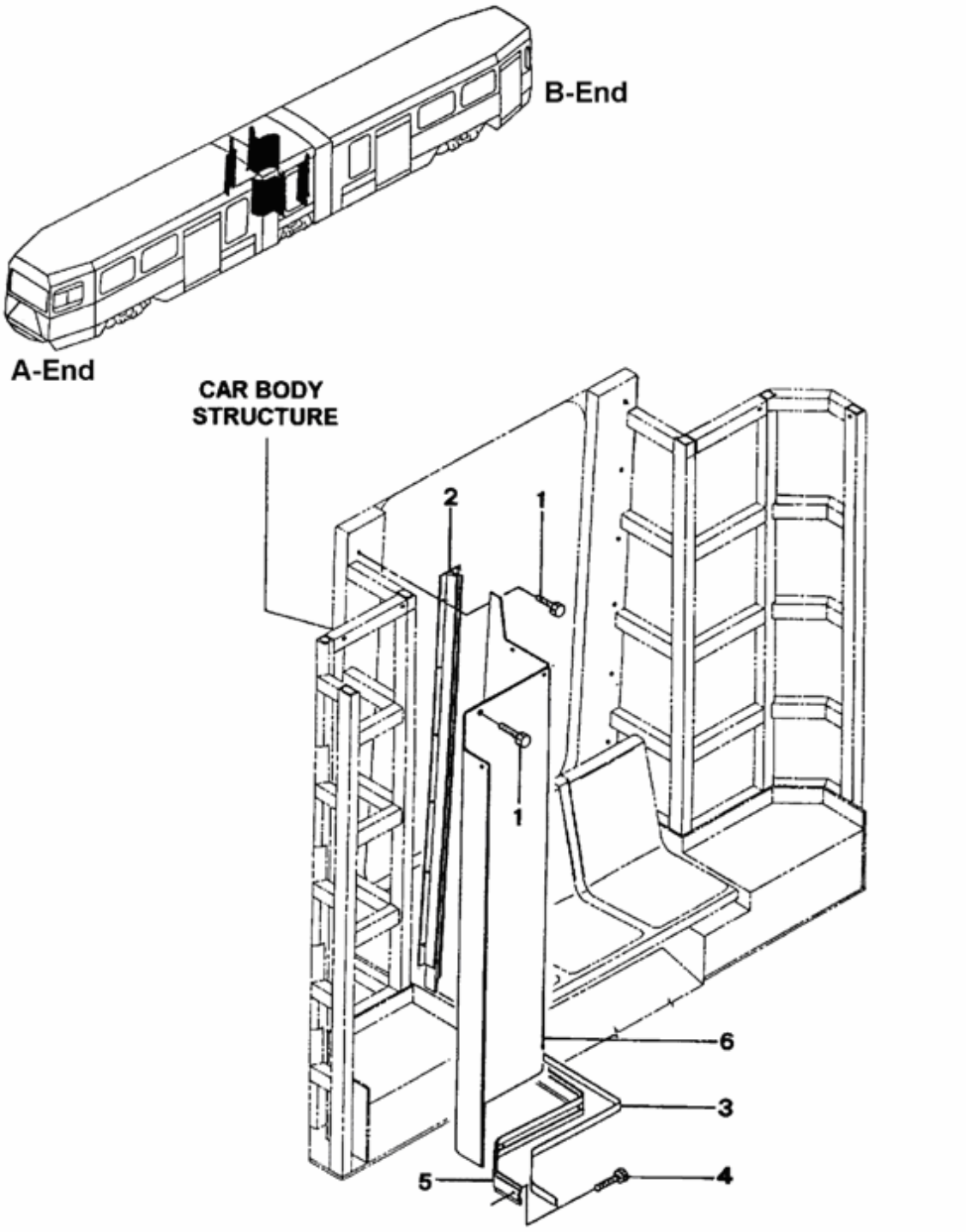
a) Angular Wall Panel - Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Angular Wall Panels, proceed as follows (Refer to Figure 2-5.4):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove screws (1).
  3. Remove gasket (screw cover) (3).
  4. Remove screws (4).

5. Remove frame (5).



1. SCREW
2. PROFILE
3. GASKET (SCREW COVER)
4. SCREW
5. FRAME
6. ANGULAR WALL PANEL

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6. Remove angular wall panel (6) and profile (2).

Figure 2-5.4 Angular Wall Panels – Typical Removal

b) Ceiling Panel - Typical Removal

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Remove Ceiling Panels, proceed as follows (Refer to Figure 2-5.5):

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Panel (1) Removal:
   a. Operate on retainer (6) to unlock the Panel.
   b. Remove the Panel.
3. Panel (2) Removal:
   a. Open the Panel.
   b. Remove the screw (9) and nut (10) from hinge (8).
   c. Remove the Panel (8).
   d. If necessary, remove hinge (8) as follows:
      (1) Remove screws (11) and nut (13).
      (2) Remove hinge (8) with shim (12).
4. Panels (3) Removal:
   a. Operate on retainer (6) to unlock the Panel.
   b. Remove the Panel.
5. Panels (4) Removal:
   a. Operate on retainer (6) to unlock the Panel.
   b. Remove the Panel.
6. Panels (5) Removal:
   a. Remove Articulation Section Lights (Refer to Section 6).
   b. Remove Loud Speakers (Refer to Section 6).
   c. Operate on retainer (6) to unlock the Panel.
   d. Remove the Panel.

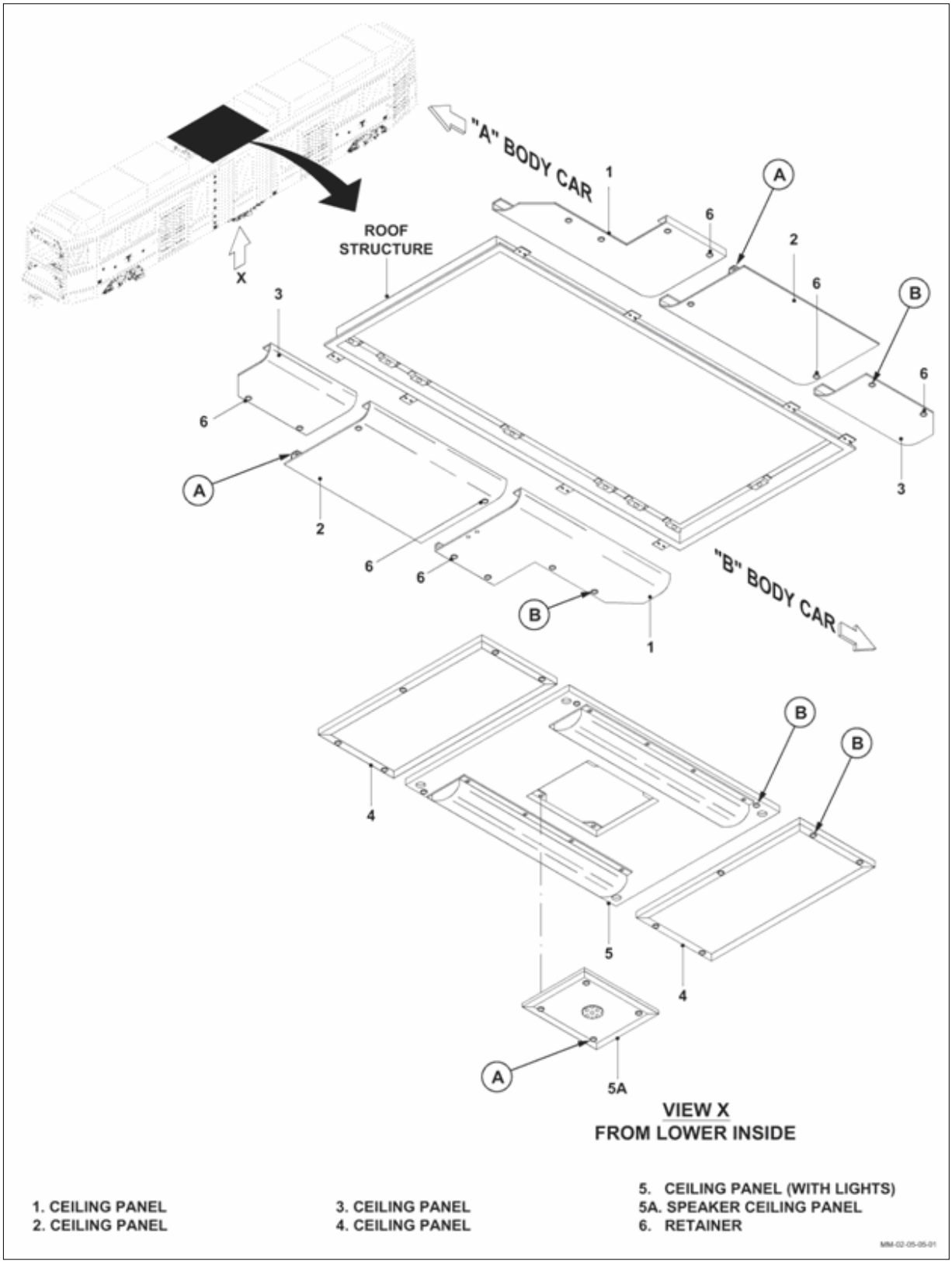
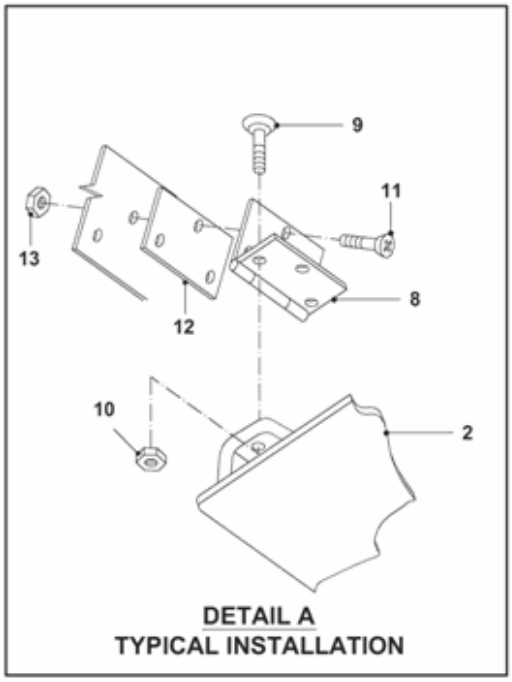
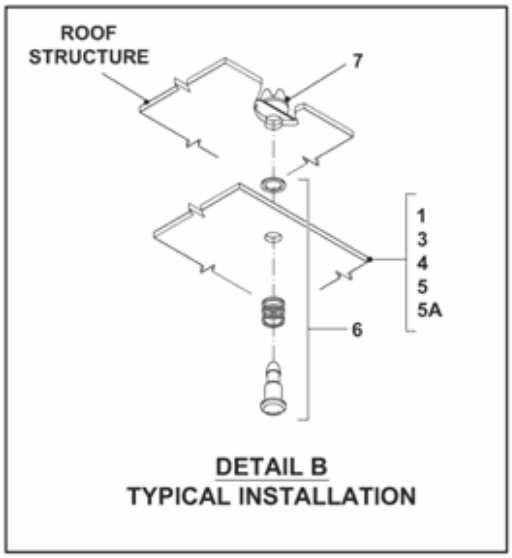


Figure 2-5.5 Ceiling Panel – Typical Removal (Sheet 1 of 2)



DETAIL A
TYPICAL INSTALLATION



DETAIL B
TYPICAL INSTALLATION

1. CEILING PANEL
2. CEILING PANEL
3. CEILING PANEL
4. CEILING PANEL
5. CEILING PANEL (WITH LIGHTS)
5A. SPEAKER CEILING PANEL
6. RETAINER
7. RECEPTACLE
8. HINGE
9. SCREW
10. NUT
11. SCREW
12. SHIM
13. NUT

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Figure 2-5.5 Ceiling Panel – Typical Removal (Sheet 2 of 2)

c) Liners – Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Remove each Liner, proceed as follows (Refer to Figure 2-5.6):
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove passengers seats in the involved area. (Refer to para 2-2.3.d).
  3. Remove screws (4 or 9) on the finishing moldings in the involved area.
  4. Remove finishing moldings (2 ,6 or 8).
  5. Remove the liner (5 or 7).

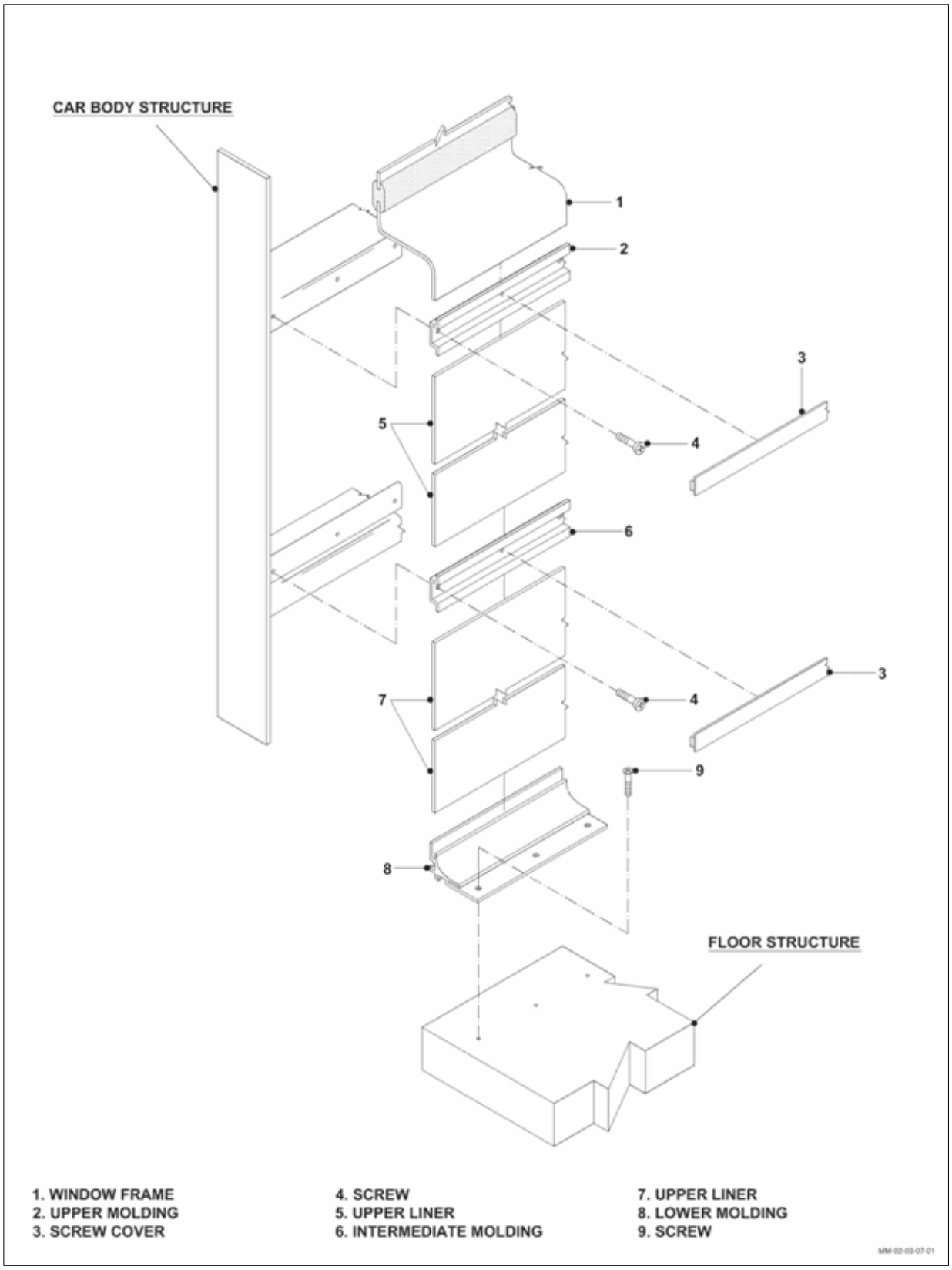


Figure 2-5.6 Liners - Typical Removal

d) Fiberglass Box Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Lifting Device (Minimum Capacity 300 Lb (135 Kg)).
  2. Material (Not Applicable).

- **Procedure.**

  To Remove each Fiberglass Box, proceed as follows (Refer to Figure 2-5.7):

WARNING:	**FIBERGLASS BOX WEIGHS 261 LB (118 KG). DURING THE REMOVAL PROCEDURE MAKE SURE TO OPERATES WITH CARE TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Remove passenger seats and box pads (Refer to para 2-3.4.d f)).
3. Remove stanchions (Refer to para 2-3.1.h).
4. Remove articulation section "C" floor (Refer to para 2-5.4.d).
5. Remove screws (2) and disconnect frames (3, 4, 5, 6, 7) from fiberglass box lower edge.
6. Remove screws (16) and disconnect upper frame (17).
7. Remove screws (14) and disconnect cover (15).
8. Remove screws (11, 12, 13).
9. Using a lifting device, remove fiberglass box (1) from Articulation Section.
10. Remove gasket (8).
11. If required, remove screws (9) and profile (10).

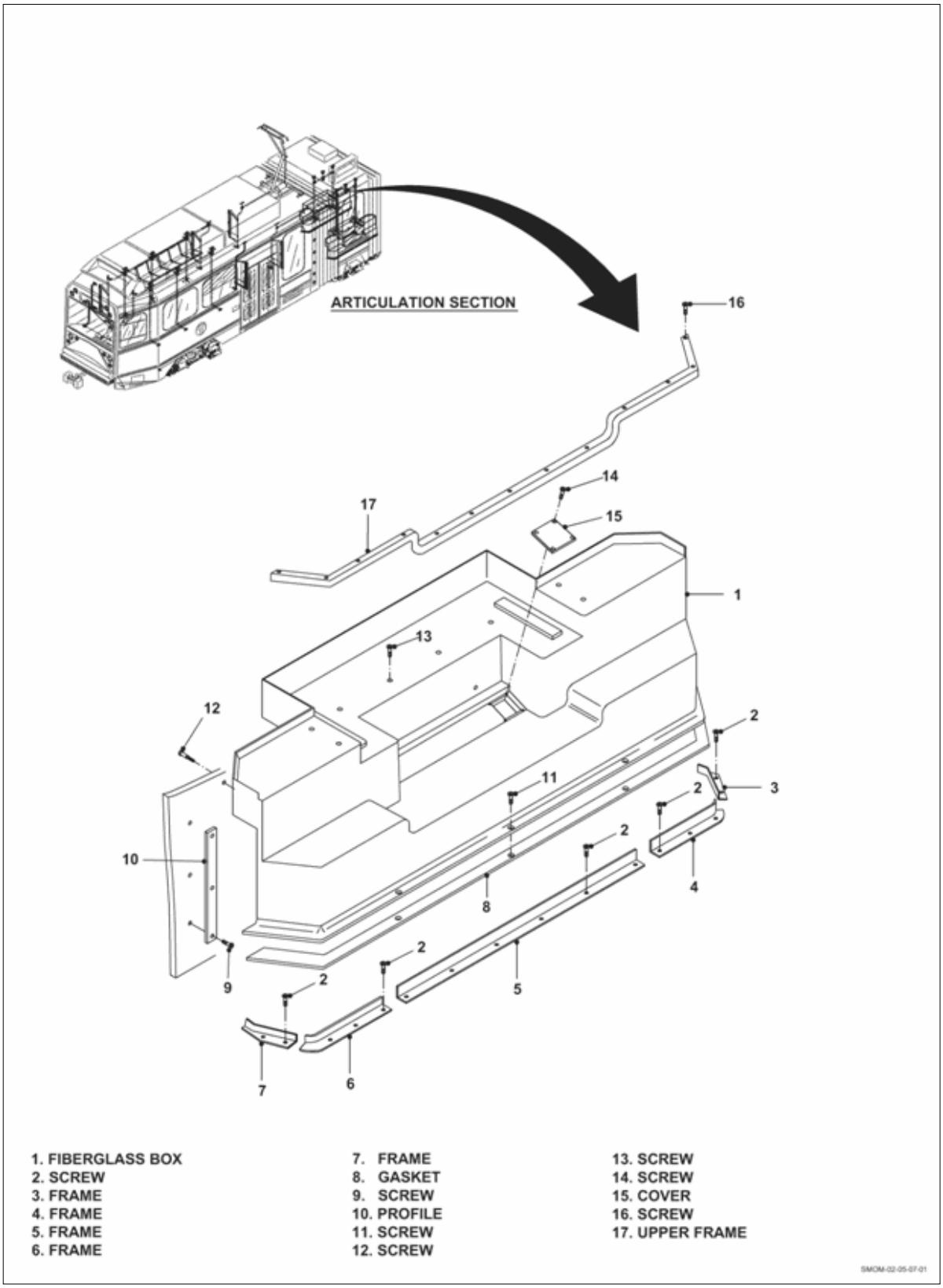


Figure 2-5.7 Box on Articulation - Removal

2-5.2.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Articulation Section Interiors component, proceed as follows:

  1. Clean Angular Walls, Ceiling Panels, Liners and Fiberglass Boxes using mild detergent diluted in water; rinse and dry with clean water and cleaning rags.

b) Painting (Not Applicable)

2-5.2.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Articulation Section Interiors, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Angular Walls, Liners, Ceiling Panels and Fiberglass Boxes for dent, cracks, scratches or burns.
  3. Inspect Angular Walls, Ceiling Panels and Fiberglass Boxes for correct installation.
  4. Inspections results must be recorder on Defect Report Cards to allow the planning of Maintenance Operations.

2-5.2.g Repair

The Articulation Section Interiors Repair procedures consist in the following main operations:

– Liners Panels (Melamine) (Refer to para 2-3.2.g a)).

– Ceiling Panels (Sandwich) (Refer to para 2-3.2.g b)).

2-5.2.h Reassembly

The Articulation Section Interiors Installation procedures consist in the following main operations:

– Angular Wall Panel - Typical Installation.

– Ceiling Panel - Typical Installation.

– Liners – Typical Installation.

– Fiberglass Box Installation.

a) Angular Wall Panel - Typical Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Install each Angular Wall Panels, proceed as follows (Refer to Figure 2-5.8):
  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the angular wall panel's installation surfaces.
  3. Position the profile (2).
  4. Position the angular wall panel (6).
  5. Install screws (1).
  6. Position the frame (5).
  7. Install screws (4).
  8. Tighten screws (1, 4) to **7 lb-ft (9.5 Nm)**.
  9. Install gasket (screw cover) (3).

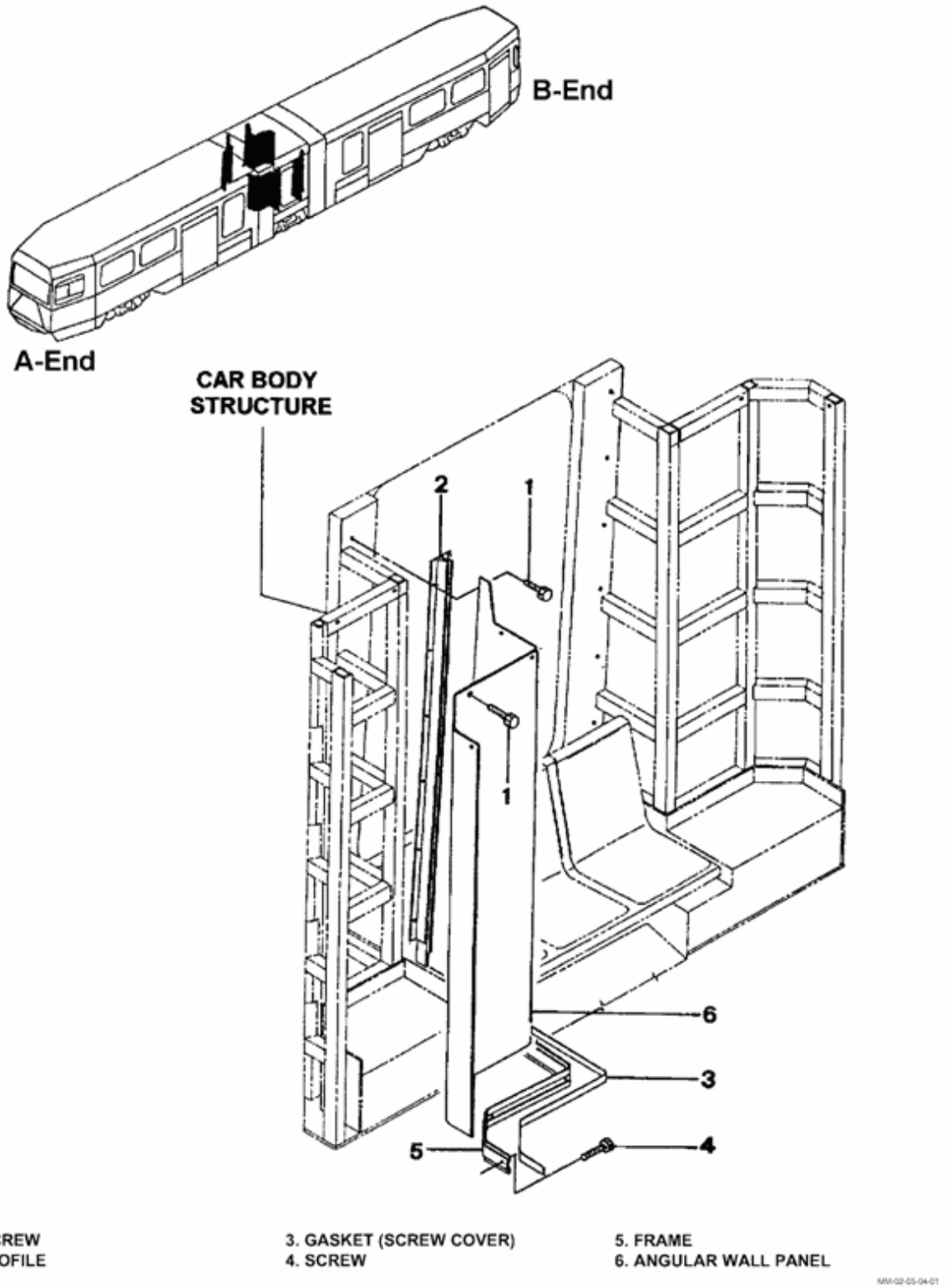


Figure 2-5.8 Angular Wall Panels – Typical Installation

b) Ceiling Panel - Typical Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Install Ceiling Panels, proceed as follows (Refer to Figure 2-5.9):

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. Panels (1) Installation:
   a. Position the Panel in its relevant place.
   b. Lock the Panel by retainers (6) as shown in the Typical Detail.
3. Panels (2) Installation:
   a. If necessary, install hinge (8) on the roof structure as follows:
      (1) Position hinge (8) with shim (12) as shown in the typical detail.
      (2) Install screws (11) and nut (13).
      (3) Tighten nut (13) to **7ft-lb (9.5 Nm)**.
   b. Position the Panel (8) in its relevant place.
   c. Install screw (9) and nut (10).
   d. Tighten nut (10) to **7ft-lb (9.5 Nm)**.
   e. Lock the Panel by retainers (6) as shown in the Typical Detail.
4. Panels (3) Installation:
   a. Position the Panel in its relevant place.
   b. Lock the Panel by retainers (6) as shown in the Typical Detail.
5. Panels (4) Installation:
   a. Position the Panel in its relevant place.
   b. Lock the Panel by retainers (6) as shown in the Typical Detail.
6. Panels (5) Installation:
   a. Position the Panel in its relevant place.
   b. Lock the Panel by retainers (6) as shown in the Typical Detail.
   c. Install Articulation Section Lights (Refer to Section 6).
   d. Install Loud Speakers (Refer to Section 6).

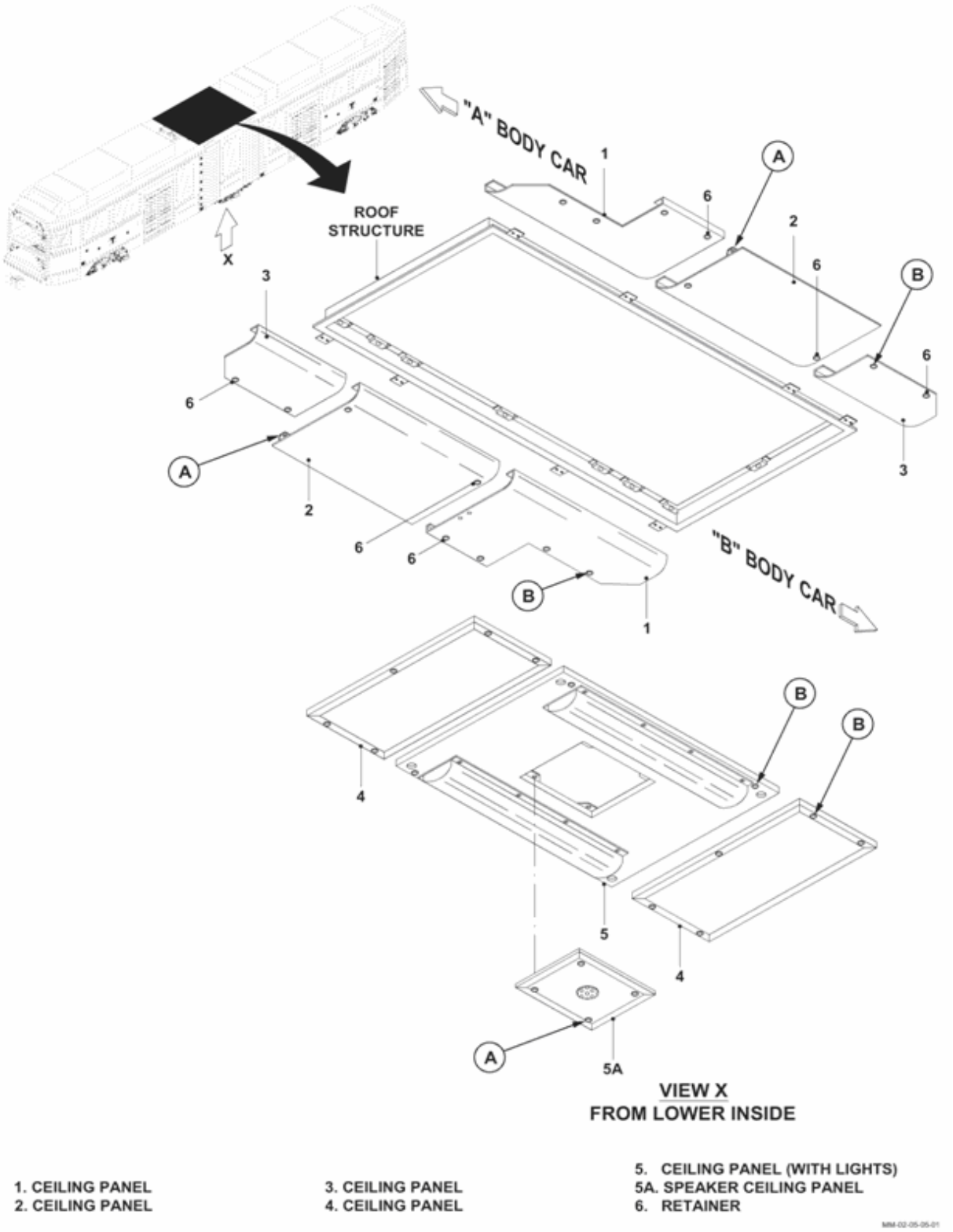
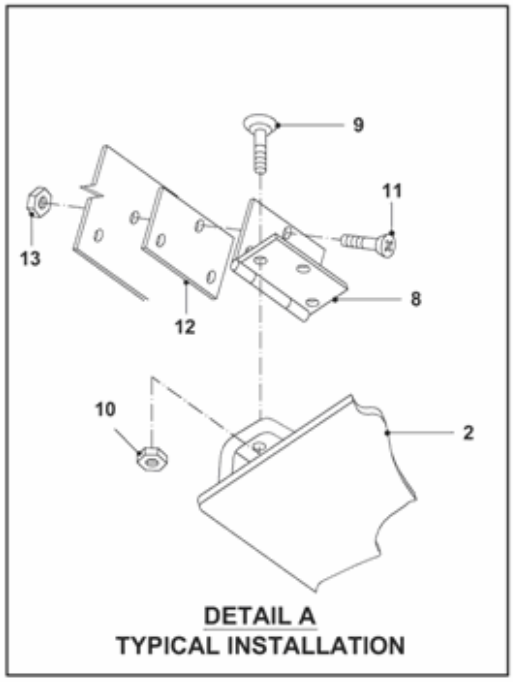
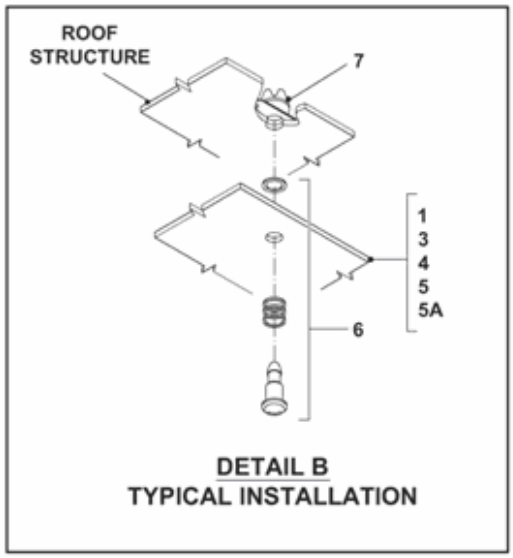


Figure 2-5.9 Ceiling Panel – Typical Installation (Sheet 1 of 2)





1. CEILING PANEL
2. CEILING PANEL
3. CEILING PANEL
4. CEILING PANEL
5. CEILING PANEL (WITH LIGHTS)
5A. SPEAKER CEILING PANEL
6. RETAINER
7. RECEPTACLE
8. HINGE
9. SCREW
10. NUT
11. SCREW
12. SHIM
13. NUT

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Figure 2-5.9 Ceiling Panel – Typical Installation (Sheet 2 of 2)

c) Liners – Typical Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install each Liner, proceed as follows (Refer to Figure 2-5.10):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Position liner (5 or 7).
  3. Install finishing moldings (2 ,6 or 8).
  4. Install and tighten screws (4 or 9) to **7 lb-ft (9.5 Nm)**.
  5. Install passengers seats. (Refer to para 2-3.4.f a) through h) (Installation).

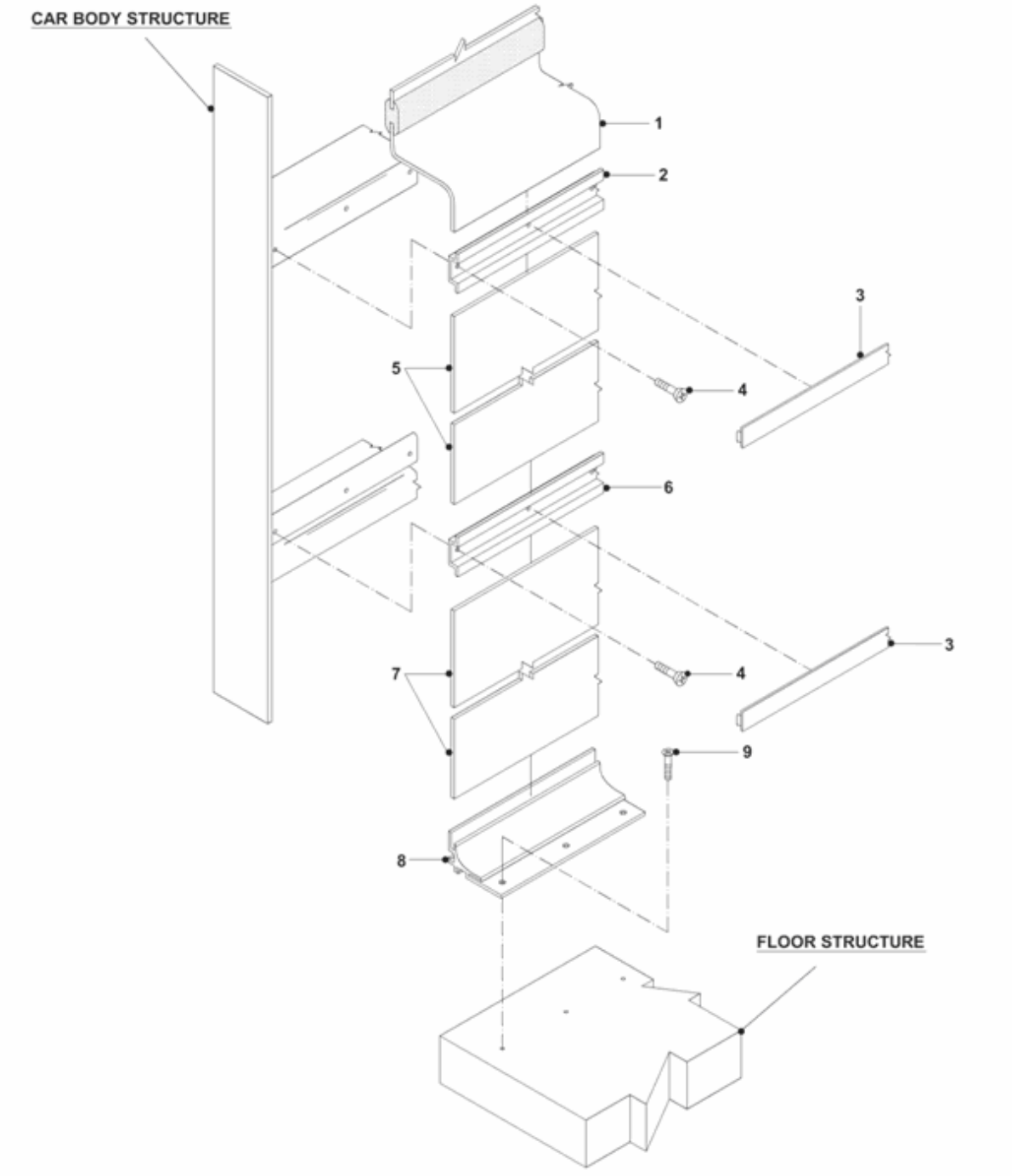


Figure 2-5.10 Liners - Typical Installation

d) Fiberglass Box Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Lifting Device (Minimum Capacity 300 Lb (135 Kg)).
  2. Material.
     - Sealing, DOW CORNING 197 Type.

- **Procedure.**

  To Install each Fiberglass Box, proceed as follows (Refer to Figure 2-5.11):

> **WARNING:** **FIBERGLASS BOX WEIGHS 261 LB (118 KG). DURING THE INSTALLATION PROCEDURE MAKE SURE TO OPERATES WITH CARE TO PREVENT UNSAFE CONDITIONS.**

1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
2. If required, position profile (10).
3. Install and tighten screws (9).
4. Vaccum clean first and then degrease the floor in contact with the fiberglass box.

> **CAUTION:** DURING FIBERGLASS BOX INSTALLATION, FOLLOWS STRICTLY SEALING MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIROMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

5. Apply Sealing, DOW CORNING 197 Type as shown in the Figure 2-5.11 Sheet 1.
6. Position gasket (8).
7. Using a Lifting Device position fiberglass box (1) in the related seat.
8. Install and tighten screws (11, 12, 13).
9. Position frames (3, 4, 5, 6,7).
10. Install and tighten screws (2).

11. Position upper frame (17).
12. Install and tighten screws (16).
13. Position cover (15).
14. Install and tighten screws (14).
15. Install articulation section "C" floor (Refer to para 2-5.4.h).
16. Install stanchions and hand rails (Refer to para 2-3.1.h).
17. Install passenger seats and box pads (Refer to para 2-3.4.h).

2-5.2.i Adjustment/Test (Not Applicable)

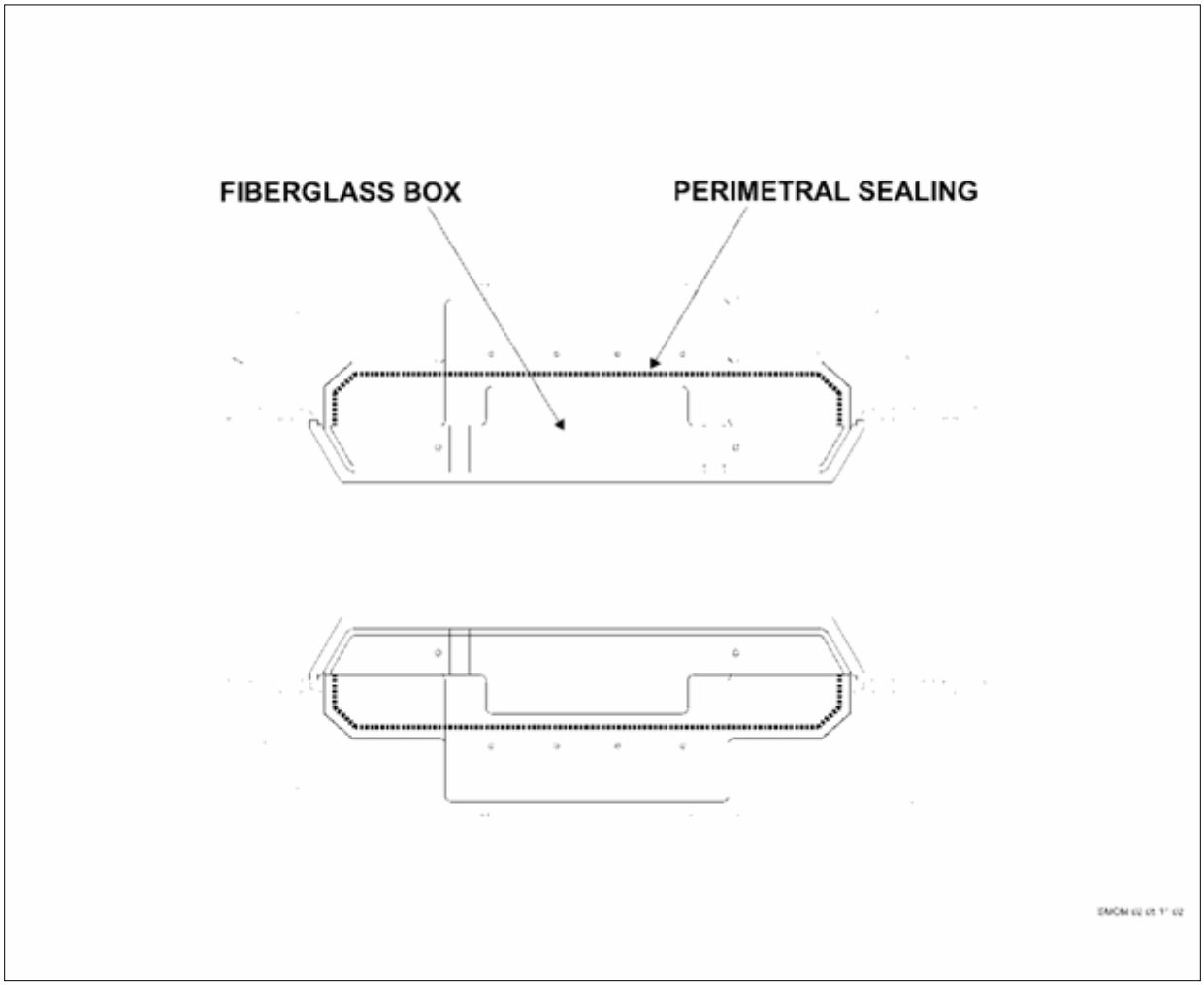


Figure 2-5.11 Fiberglass Box - Installation (Sheet 1 of 2)

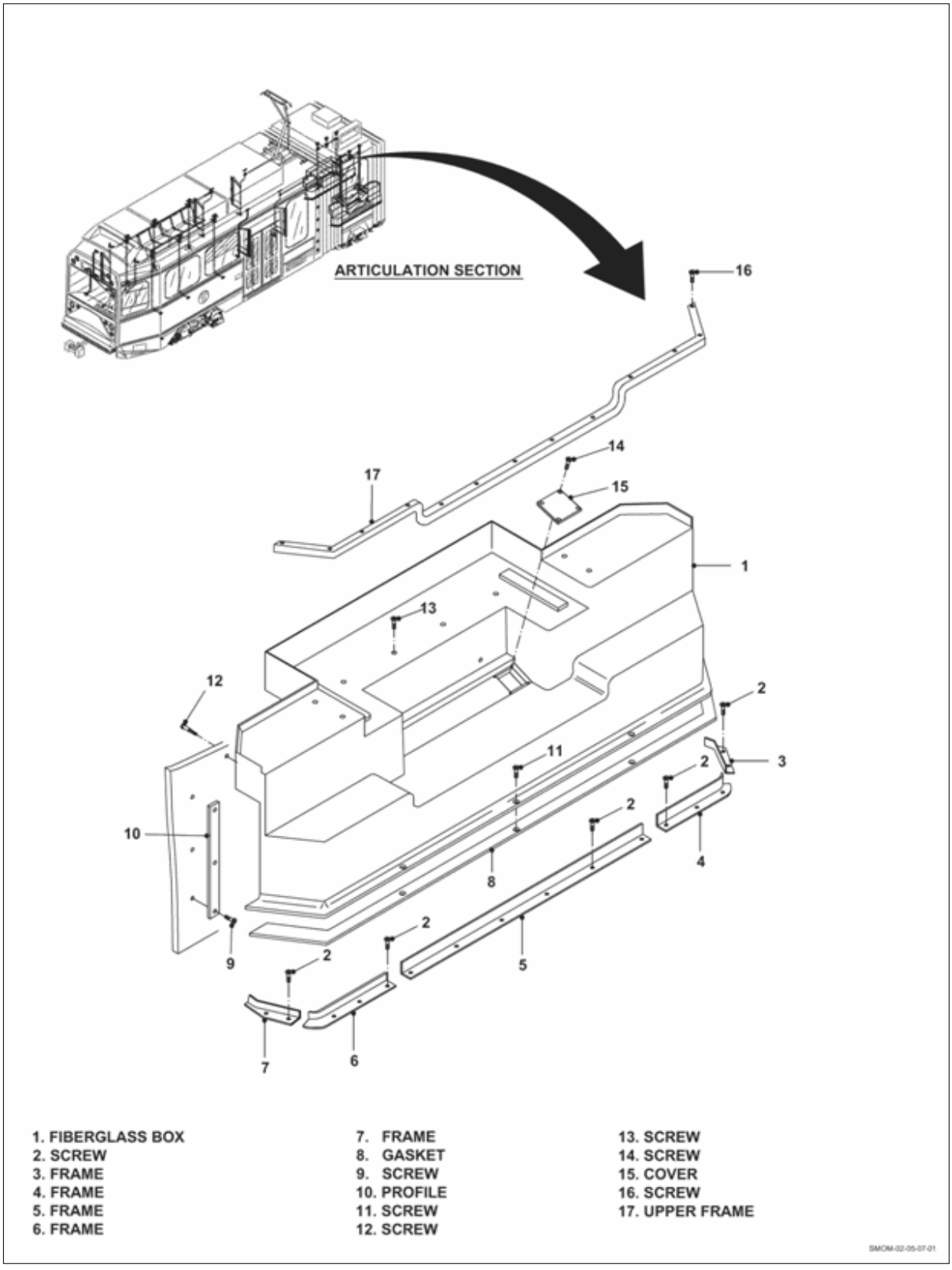


Figure 2-5.11Fiberglass Box - Installation (Sheet 2 of 2)

2-5.3 Bellows

2-5.3.a Description and Theory of Operation

Two watertight Bellows (Refer to Figure 2-5.12) each one designed in two parts (External Bellow and Internal Bellow) are installed between the Articulation Section "C" and the "A" and "B" Body Section respectively.

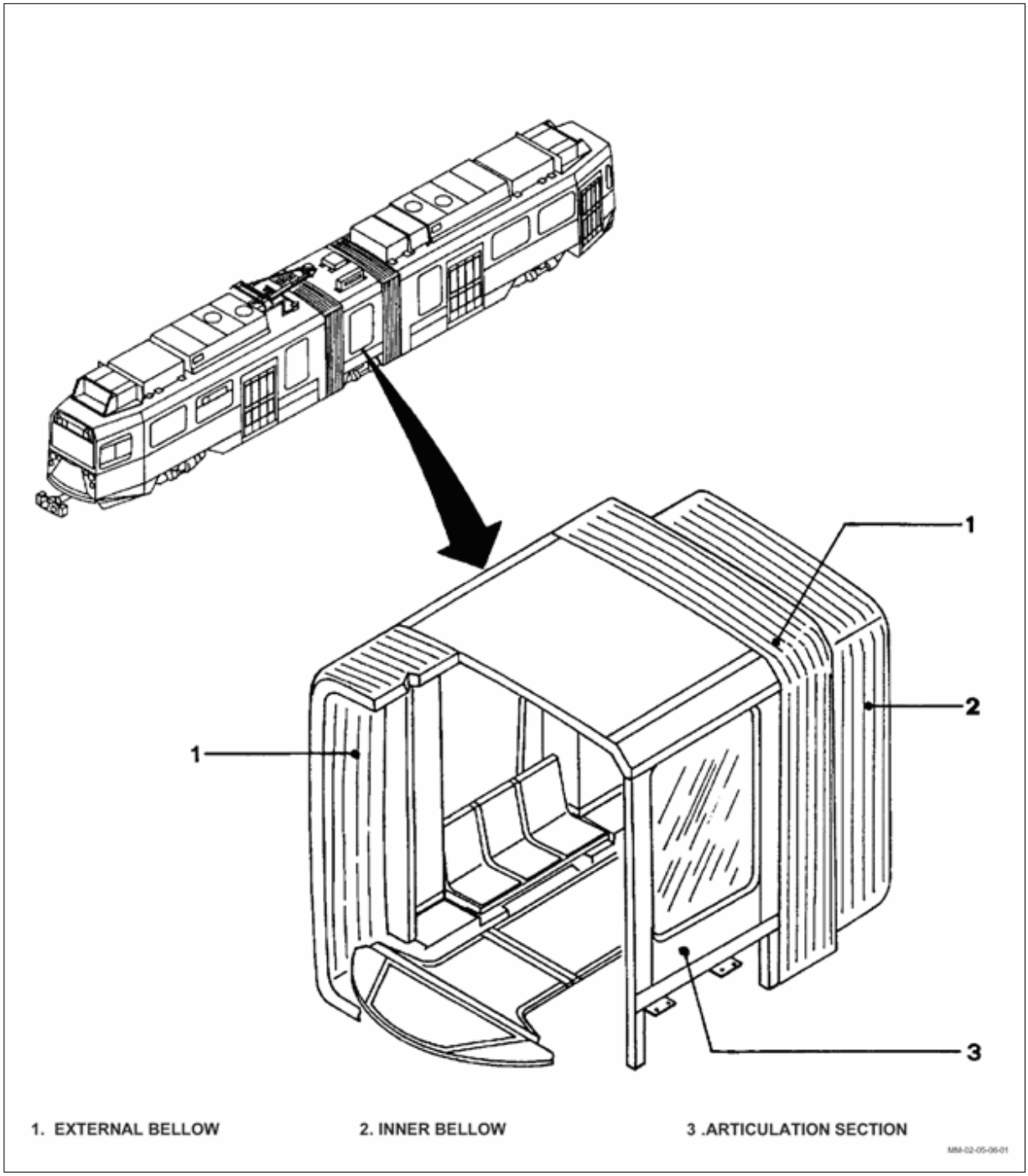


Figure 2-5.12 Bellows - Location

2-5.3.b Specific Safety Precautions

WARNING: **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

WARNING: **BEFORE PERFORMING BELLOW REMOVAL / INSTALLATION PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE BY LOWERING THE PANTOGRAPH AND SWITCHING OFF THE BATTERY CB (3Q03).**

WARNING: **EACH BELLOW WEIGHS 150 LB (68 KG) ABOVE. DURING THE REMOVAL / INSTALLATION PROCEDURE MAKE SURE THAT HOSTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

2-5.3.c Fault Isolation

For Bellow Fault Isolation, refer to Table 2-5.8.

Table 2-5.8 Bellows- Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Attaching parts loose/ damaged.	1. Vibrations.	1. Fasten/replace.
2. Bellow damaged.	1. Heavy stress.	1. Repair/Replace.
	2. Vandalism.	2. Repair/Replace.

2-5.3.d Disassembly

The Bellows Removal procedures consist in the following main operations:

– External Bellow Removal.

– Inner Bellow Removal.

a) External Bellow Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (200 lb minimum capacity).
  2. Material.
     - Sealing Remover, commercial.

- **Procedure.**

  To Remove External Bellow, proceed as follows (Refer to Figure 2-5.13):

> **WARNING:** **EACH BELLOW WEIGHS 150 LB (68 KG) ABOVE. DURING THE REMOVAL PROCEDURE MAKE SURE THAT HOSTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
   a. Lock the Catenary Isolating Switch in the open position.
   b. Put a sign on the Isolating Switch as follows: **"WARNING: PEOPLE WORKING ON ROOF DO NOT OPERATE THE SWITCH"**.
   c. Apply Wheel Chocks.
2. Inner Bellow must be slid back to allow access to the equipment necessary for outer bellow removal.
3. Operate from vehicle internal side and remove sealing around External Bellow – Articulation Section / Vehicle Structure connection.

   NOTE: Gasket (2) is glued (self-adhesive) to the Articulation Section / Vehicle Structure. It is not necessary remove it.

4. Remove screws (3, 5).
5. Gain access to the Tie Rod Spring Hooks (1, 6).
6. Disengage Hooks (1, 6) from related eye bolt.
7. Bind bellows with Nylon straps.
8. Hoist the bellows using nylon strap and hoisting device (min capacity 200 lb) from the upper part of the bellow.
9. Remove bellow (4) using hoisting device.

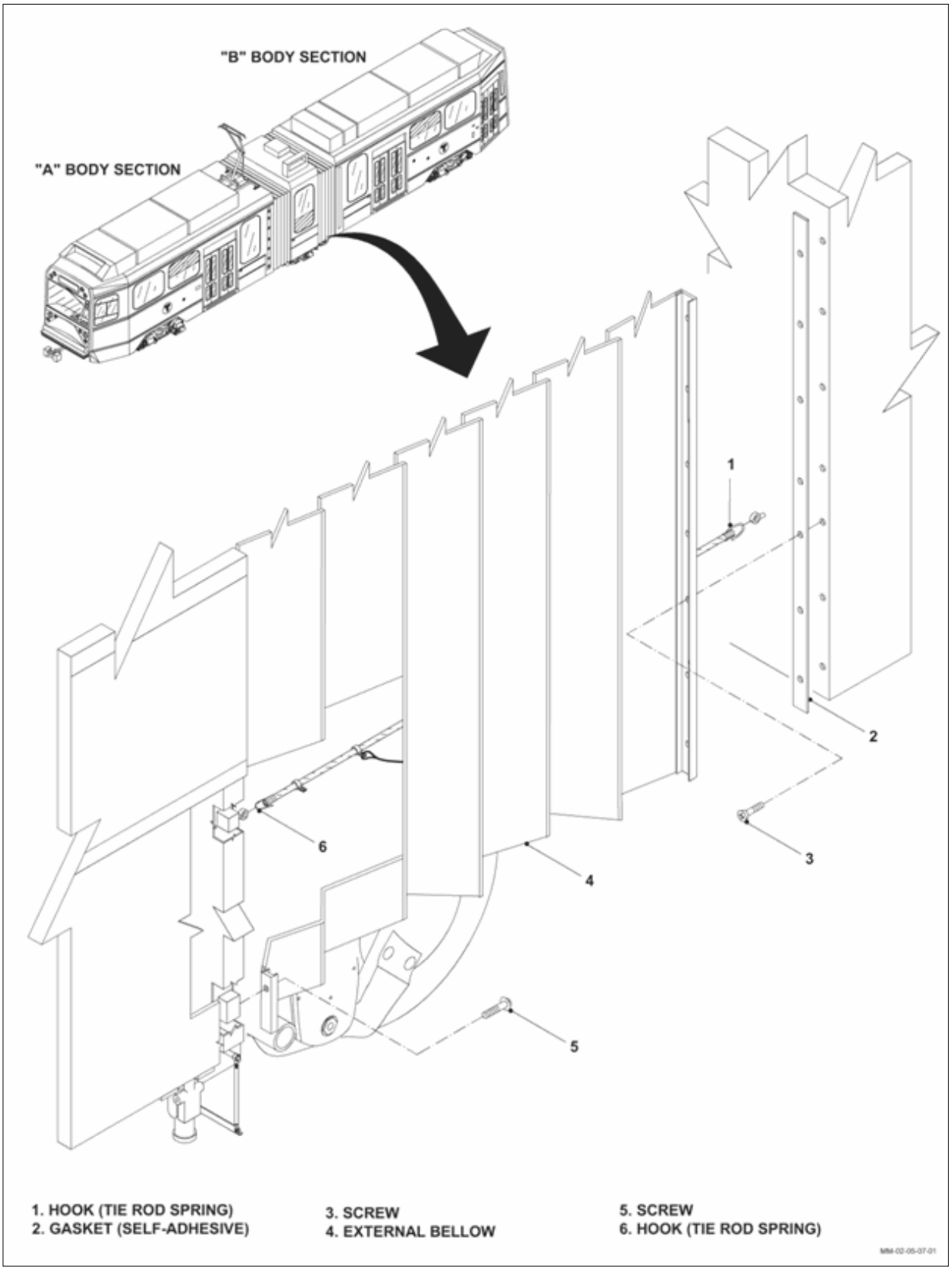


Figure 2-5.13 External Bellow - Removal

b) Inner Bellow Removal

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Hoisting Device (200 lb minimum capacity).
2. Material.
   - Sealing Remover, commercial.

- **Procedure.**

To Remove Inner Bellow, proceed as follows (Refer to Figure 2-5.14):

WARNING:	**EACH BELLOW WEIGHS 150 LB (68 KG) ABOVE. DURING THE REMOVAL PROCEDURE MAKE SURE THAT HOSTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Remove screws (2, 4).
3. Gain access to the Tie Rod Spring Hooks (1, 6).
4. Disengage Hooks (1, 6) from related eye bolt.
5. Bind bellows with Nylon straps.
6. Hoist the bellows using nylon strap and hoisting device (min capacity 200 lb) from the upper part of the bellow.
7. Remove bellow (3) using the hoisting device.

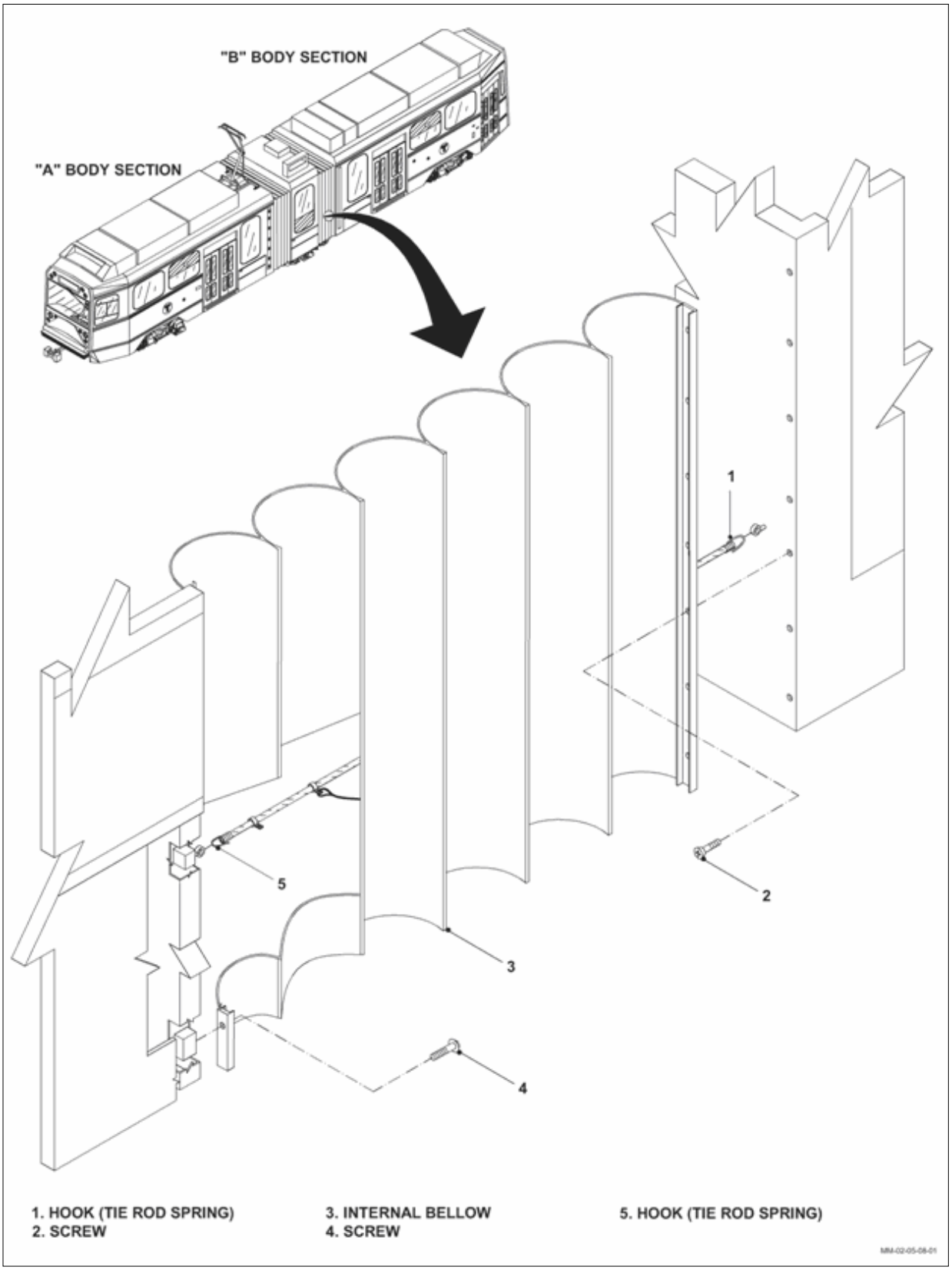


Figure 2-5.14 Inner Bellow - Removal

2-5.3.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Bellows, proceed as follows:

  1. Clean each Bellow (External and Internal side) using mild detergent diluted in water; rinse with clean water and dry using cleaning rags with compressed air. There are no specific prohibition and / or restrictions regarding use of high pressure washer or steam cleaners.

b) Painting (Not Applicable)

2-5.3.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Bellows (External and Inner), proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect bellow for damage.
  3. Inspect spring tie rod for stretch.
  4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-5.3.g Repair

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
     - Liquid Buffer.
- **Procedure.**

  To Repair Bellows (External and Inner), proceed as follows:

  1. Score the bellow area involved in the repair operation.
  2. Clean the selected area to be repaired using thinner.
  3. Roughen the area to be repaired using abrasive cloth.
  4. Prepare a patch, suitable in dimension and shape to the repair area.

     NOTE: Pay attention around the edge. Roughen uniformly the side to be glued using an abrasive cloth and abrade the external edges until the patch's weave is visible.

  5. Apply liquid buffer only on the bellow and on the outlines of the patch.
  6. Using a brush, apply a complete adhesive layer on both completely dried surfaces.
  7. After flash time (2-3 minutes) match both the pieces and put them under pressure with a manual roller to avoid air bubbles.
  8. Reinstall the repaired bellow after 24 hours to allow the complete development of the adhesive chemical process.

2-5.3.h Reassembly

The Bellows Installation procedures consist in the following main operations:

– External Bellow Installation.

– Inner Bellow Installation.

a) External Bellow Installation

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Hoisting Device (200 lb minimum capacity).
2. Material.
   - Sealing, DOW CORNING 3525 Type.
   - Gasket, P/N R12375702, Q.ty as needed.

- **Procedure.**

To Install External Bellow, proceed as follows (Refer to Figure 2-5.15):

WARNING:	**EACH BELLOW WEIGHS 150 LB (68 KG) ABOVE. DURING THE INSTALLATION PROCEDURE MAKE SURE THAT HOSTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

NOTE: Inner Bellow must be slid back to allow access to the equipment necessary for outer bellow installation.

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. If necessary, using sealing remover, remove sealing from "U" shape bellow support and from Articultation / Vehicle Sections Structure. Particulary clean mating surface.

NOTE: Gasket (2) is glued (self-adhesive) to the Articulation Section / Vehicle Structure. If necessary replace with new one.

3. Bind bellows with Nylon straps.
4. Hoist the bellows using nylon strap and hoisting device (min capacity 200 lb) from the upper part of the bellow.
5. Using hoisting device (200 lb min capacity), position the External Bellow and release nylon strap.
6. Connect Hooks (1, 6) to the related eye bolts.

7. Install screws (3, 5).
8. Tighten screws (3, 5) to **14 lb-ft (19 Nm)**.
9. Apply, at inner side only, the recommended sealing around Bellow - Articultation / Vehicle Sections Structure connection.
10. Install Inner Bellow (Refer to para 2-5.3.h c))

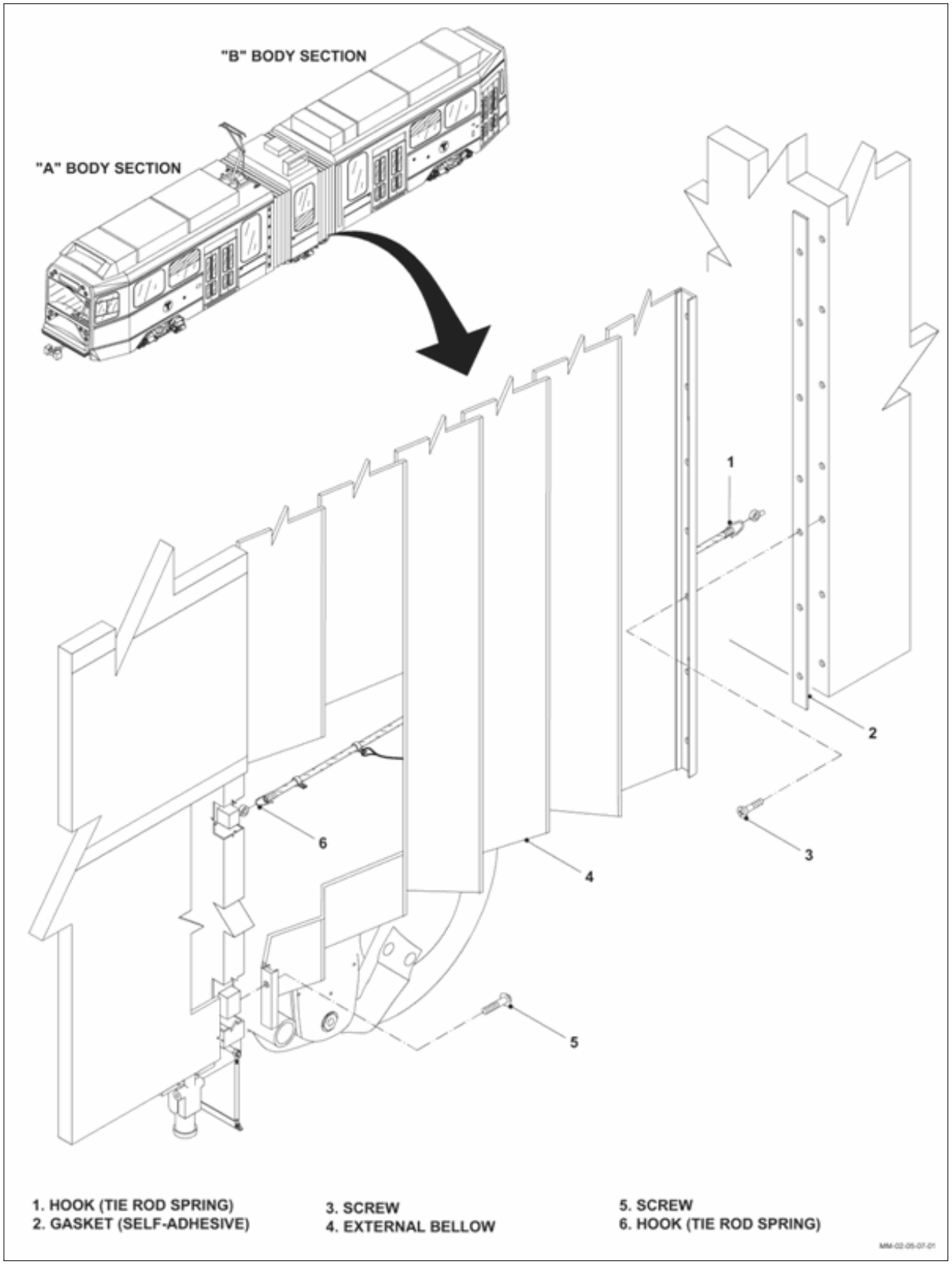


Figure 2-5.15 External Bellow - Installation

b)

c) Inner Bellow Installation

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (200 lb minimum capacity).
  2. Material (Not Applicable).
- **Procedure.**

  To Install Inner Bellow, proceed as follows (Refer to Figure 2-5.16):

> **WARNING:** **EACH BELLOW WEIGHS 150 LB (68 KG) ABOVE. DURING THE INSTALLATION PROCEDURE MAKE SURE THAT HOSTING DEVICES SUPPORT UNIT TO PREVENT UNSAFE CONDITIONS.**

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean "U" shape bellow support and Articultation / Vehicle Sections Structure. Particulary clean mating surface.
  3. Bind bellows with Nylon straps.
  4. Hoist the bellows using nylon strap and hoisting device (min capacity 200 lb) from the upper part of the bellow.
  5. Using hoisting device (200 lb min capacity), position the Inner Bellow and release nylon strap.
  6. Connect Hooks (1, 5) to the related eye bolts.
  7. Install screws (2, 4).
  8. Tighten screws (2, 4) to **14 lb-ft (19 Nm)**.

2-5.3.i Adjustment/Test (Not Applicable)

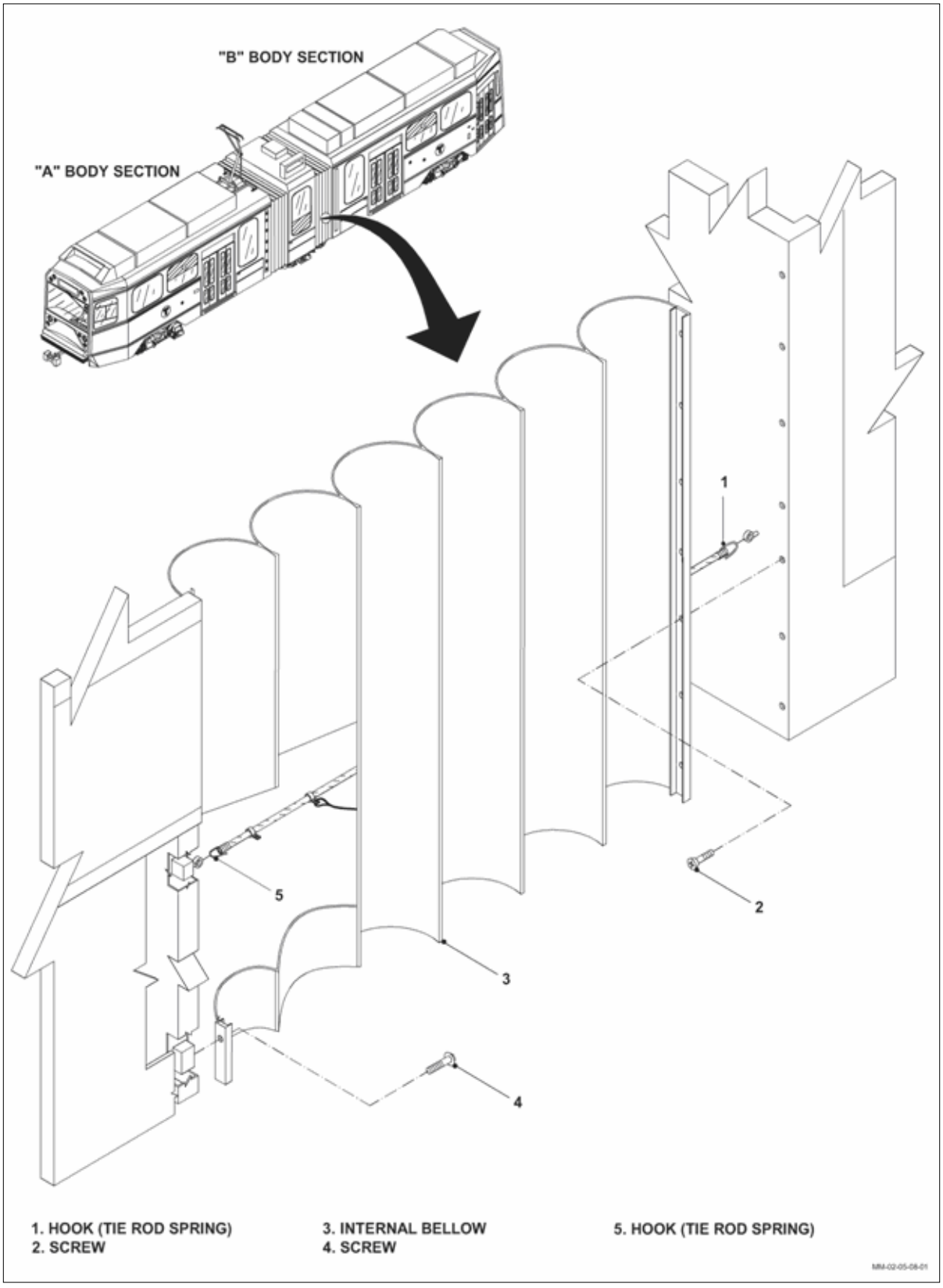


Figure 2-5.16 Inner Bellow - Installation

2-5.4 Floor

2-5.4.a Description and Operation

The Articulation Section "C" Floor (Refer to Figure 2-5.17) consists of one floor central part and two floor lateral parts provided with slip-resistant rubber sheets glued (by SCHALLSCHLUCK V606 Sorima type) to plymetal panels.

The Floor Central Part (4) is fixed with screws (2) to the Floor Lateral Part (1).

On the other side is fixed, with rivets to the Fiberglass Box on Articulation Area (12).

The Floor Lateral Part (1), compose of one central part and two sliding hinged to it, is hinged itself to the fixed one and rests on the "A" or "B" butt flap (3) through a butt strap (4) fixed bolts.

The Floor Lateral Part weight and Passengers load are supported thought a bearing plate by 5 well bearing bolted to the "A" or "B" Car Underframe structure.

This design allows to have, during the operation of the vehicle in turns, uphill and downhills the minimum floor steps between the car "C" and "A" or "B" floors.

The Floor Rubber Sheets are ribbed type, 0.2 in. thick and glued to the plymetal panels (plywood reinforced AISI 304 stainless steel sheets 0.016 in. thick) glued at each side.

The panels (0.5 in. thick) are designed to be removed through the door openings and to support also passenger crush load to AW3 with no permanent deformation over the vehicle's life. Moldings are installed around the Art. Sect. Floor, to provide a safe passenger way.

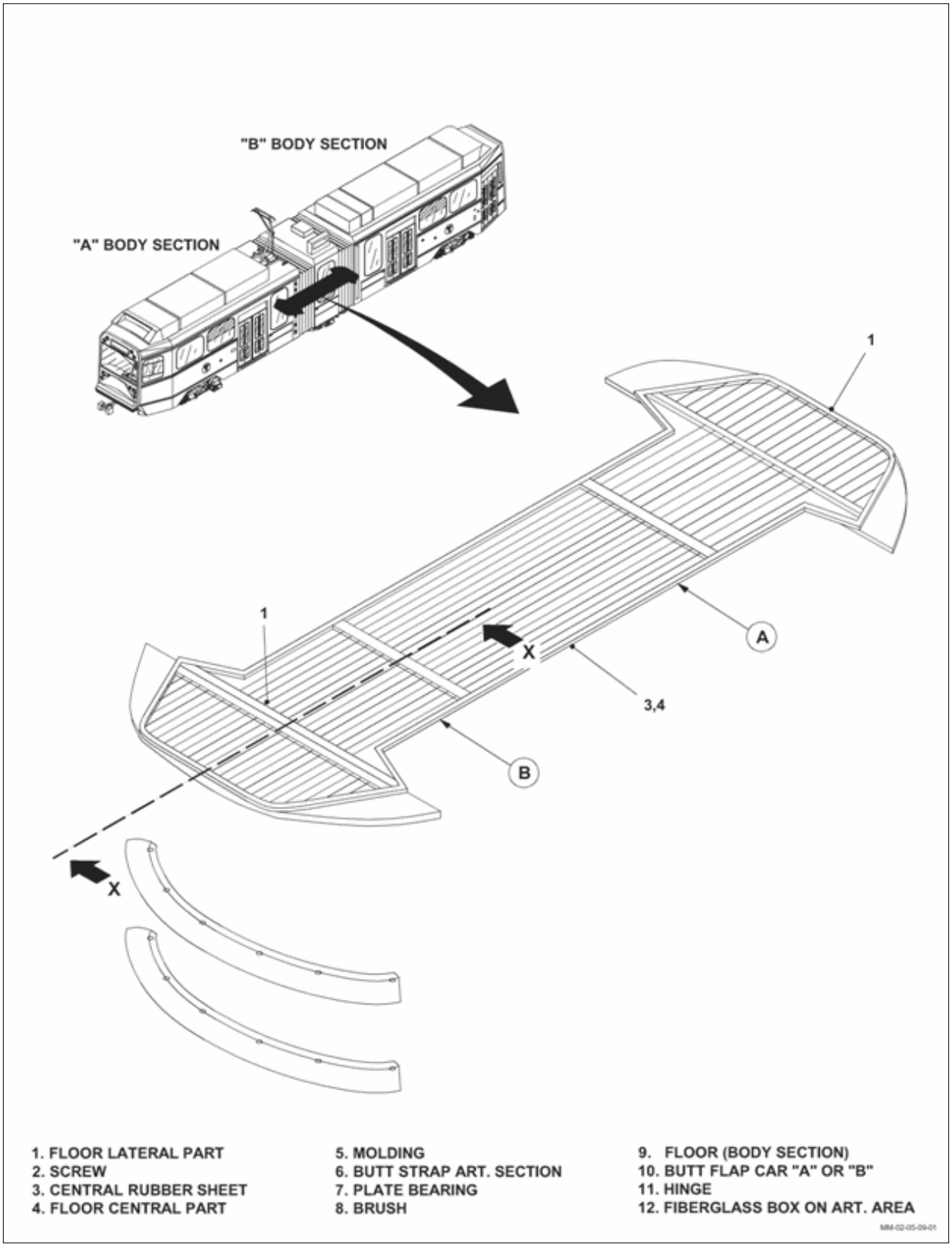
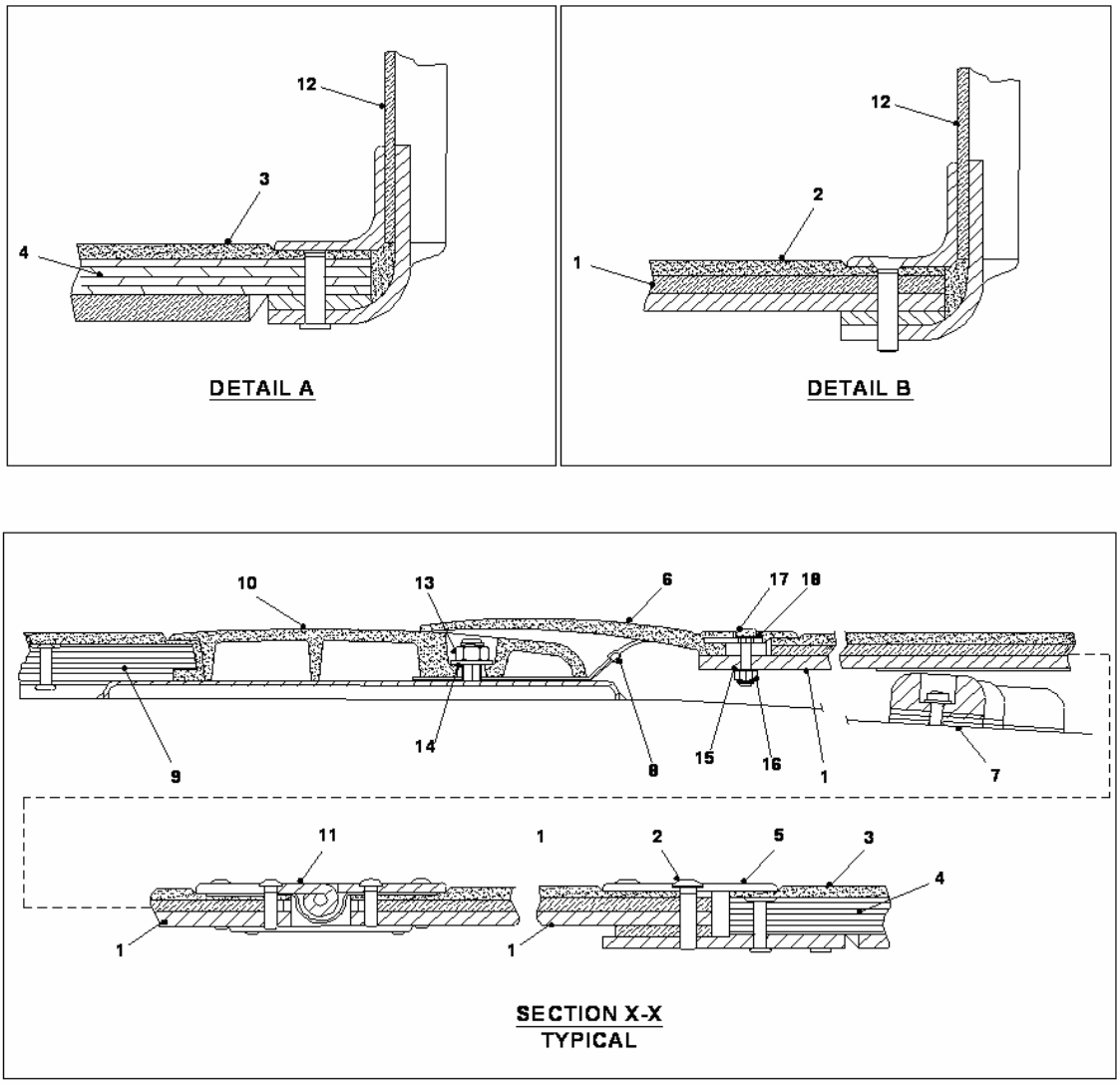


Figure 2-5.17 Floor – Location (Sheet 1 of 2)



1. FLOOR LATERAL PART
2. SCREW
3. CENTRAL RUBBER SHEET
4. FLOOR CENTRAL PART
5. MOLDING
6. BUTT STRAP ART. SECTION
7. PLATE BEARING
8. BRUSH
9. FLOOR (BODY SECTION)
10. BUTT FLAP CAR "A" OR "B"
11. HINGE
12. FIBERGLASS BOX ON ART. AREA
13. NUT
14. WASHER
15. LOCK WASHER
16. NYLOK NUT
17. LONG SCREW
18. LOCK WASHER

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Figure 2-5.17 Floor – Location (Sheet 2 of 2)

2-5.4.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING ARTICULATION SECTION FLOOR LATERAL AND CENTRAL PARTS MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

CAUTION: DO NOT USE ON RUBBER COMPONENTS THE FOLLOWING PRODUCTS:
METHYLENE CHLORIDE SOLVENTS AND COMMERCIAL PAINT STRIPPER.

2-5.4.c Fault Isolation

For Floor Fault Isolation, refer to Table 2-5.9.

Table 2-5.9 Floor- Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Rubber sheets damaged.	1. Heavy stress/ vandalism.	1. Repair. Refer to SMOM para 2-5.4.g.
2. Covings/moldings not properly fitted.	1. Attaching parts loose/ defective.	1. Fasten/replace.

2-5.4.d Disassembly

The Floor Components Removal procedures consist in the following main operations:

– Floor Linear Part Removal.

– Floor Central Part Removal.

a) Floor Lateral Part Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor Lateral Part, proceed as follows (Refer to Figure 2-5.18):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove the Inner Bellow (Refer to para 2-5.3.d b)).
  3. Remove screws (9) and molding (8).
  4. Remove screws (5) disconnecting gasket (4).
  5. Remove screws (6).
  6. Remove the Floor Lateral Part (3).

b) Floor Central Part Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Floor Central Part, proceed as follows (Refer to Figure 2-5.18):

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Remove screws (9) and molding (8).
  3. Lift by hand a corner of a rubber sheet to be removed.
  4. Putting the rubber sheet under stress, strip scrape little by little the glue layer between the rubber sheet and the plymetal panel.

5. Remove the rubber sheet (1).
6. Drill rivets using standard tools as for standard workshop practices.
7. Remove the plymetal panel (2).

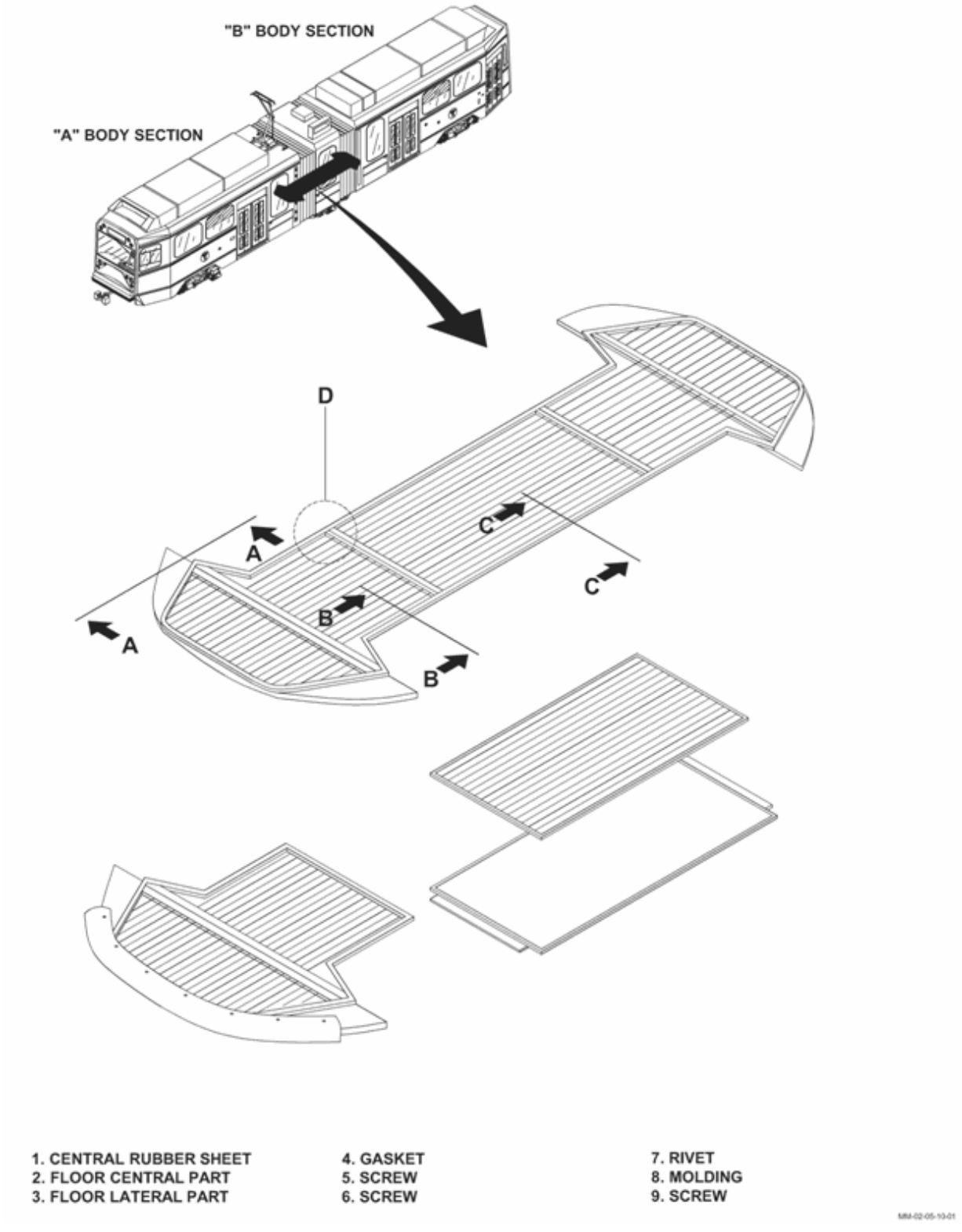


Figure 2-5.18 Floor – Removal (Sheet 1 of 2)

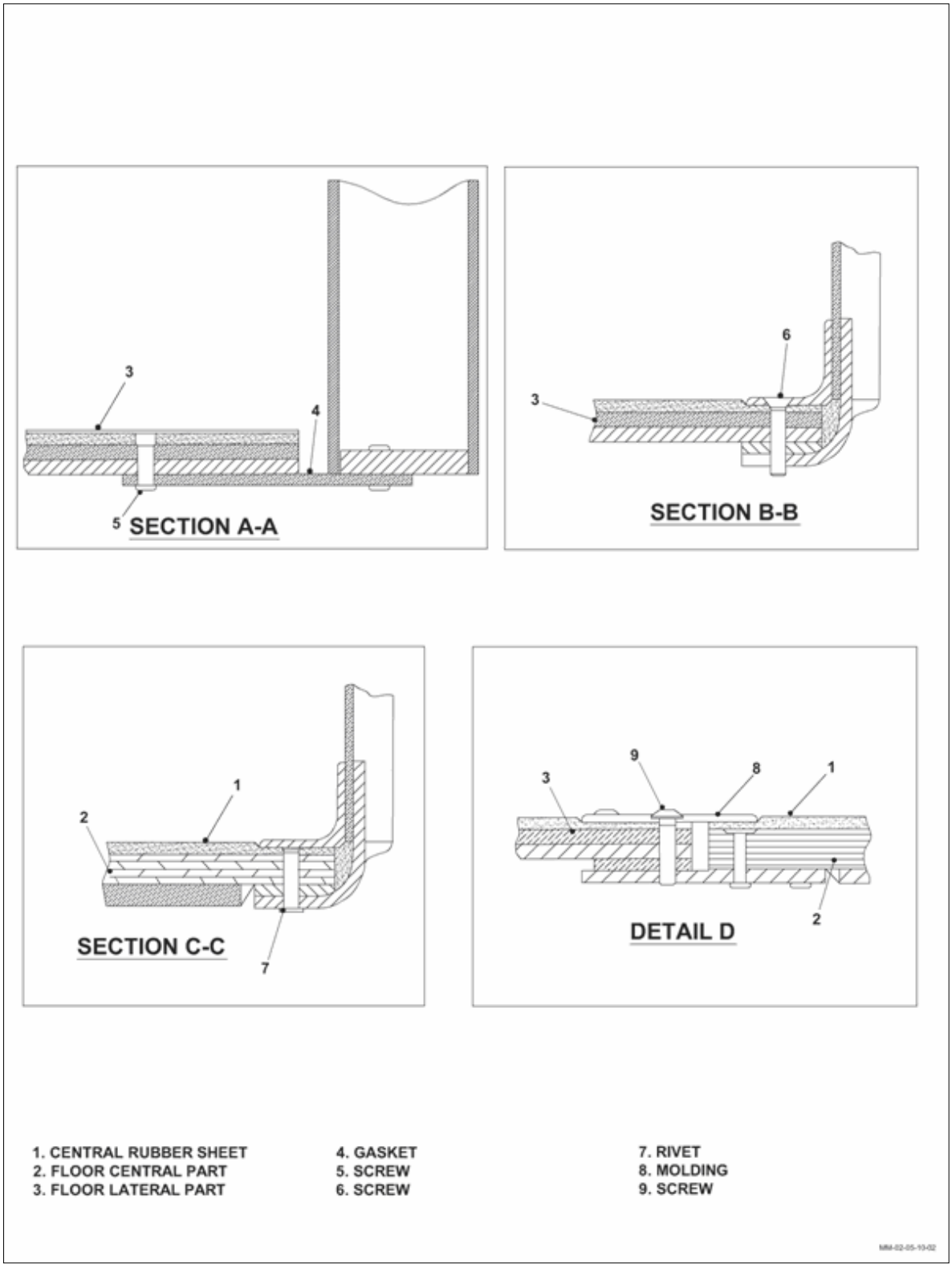


Figure 2-5.18 Floor – Removal (Sheet 2of 2)

2-5.4.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Articulation Section Floor, proceed as follows:
  1. Clean the floor using MBTA cleaning tools/equipment.
  2. Wash the floor using the mild detergent diluted in water and dry it.

b) Painting (Not Applicable)

2-5.4.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Articulation Section Floor, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect rubber floor and moldings for cracks and correct installation.
  3. Inspect rubber floor for free of indentations, particularly on circular moldings.
  4. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-5.4.g Repair

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Degreaser / Solvent (Refer to Section 1, Table 1-9).
- **Procedure.**

  To repair local/limited areas of Rubber Sheet, proceed as follows:

  1. Clean the involved area.
  2. Mark the repair area.
  3. Cut the rubber sheet, accurately following the marking lines.
  4. Putting an edge of the rubber sheet to be removed under stress, strip/scrape, the glue layer between the rubber sheets and the plymetal panel.
  5. Clean the plymetal surface using degreaser / solvent (Refer to Section 1, Table 1-9).
  6. Prepare the part of the rubber sheet to be installed.
  7. Clean the rubber sheet surface (side to be glued)
  8. Apply the glue on the plymetal surface only.
  9. Install the new rubber sheet.

2-5.4.h Reassembly

The Floor Components Installation procedures consist in the following main operations:

– Floor Linear Part Installation.

– Floor Central Part Installation.

a) Floor Lateral Part Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To Install Floor Lateral Part, proceed as follows (Refer to Figure 2-5.19):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.
  2. Clean the vehicle structure and related attaching part areas.
  3. Position the Floor Lateral Part (3).
  4. Install and tighten screws (6).
  5. Position gasket (4) and install screw (5).
  6. Position molding (8).
  7. Install and tighten screws (9).

b) Floor Central Part Installation

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
     - Glue (BOSTON HYDROBOND A TYPE) or equivalent.
     - Degreaser / Solvent (Refer to Section 1, Table 1-9).

- **Procedure.**

  To Install Floor Central Part, proceed as follows (Refer to Figure 2-5.19):

  1. Check that the Vehicle is in safety condition in accordance with MBTA Overhaul Regulations.

2. Clean the vehicle structure and related attaching part areas using degreaser / solvent.
3. Install the plymetal panel with rivets (7).
4. Clean and degrease with degreaser / solvent the plymetal panel surface(s).
5. Prepare the plymetal surface for Rubber Sheet installation by filling every void , fastener head and cracks between panels with a leveling compound (fire retardant – two parts epoxy)
6. Once the surface preparation is completed inspect it in accordance with the following criteria.
   The surface must be smooth and true within 1/16 inch in 3 feet in any direction.

   CAUTION: FOLLOW STRICTLY GLUE MANUFACTURER INSTRUCTIONS SUCH AS SURFACE PREPARATION, ENVIRONMENTAL CONDITIONS AND TIME NECESSARY FOR ADHESIVE SET.

7. Prepare and clean the side to be glued of the rubber sheet to be installed.
8. Apply the glue (BOSTON HYDROBOND A TYPE) on the plymetal surface only.
9. Install the rubber sheet.
10. Check / adjust the installation of rubber sheets. Remove contingent air bubbles or wrinkles using a clean spatula or piece of wood free of indentations

    CAUTION: AVOID TO REMOVE BUBBLES BY PIERCING THE RUBBER SHEETS.

11. Install screws (9) and molding (8).

2-5.4.i Adjustment/Test (Not Applicable)

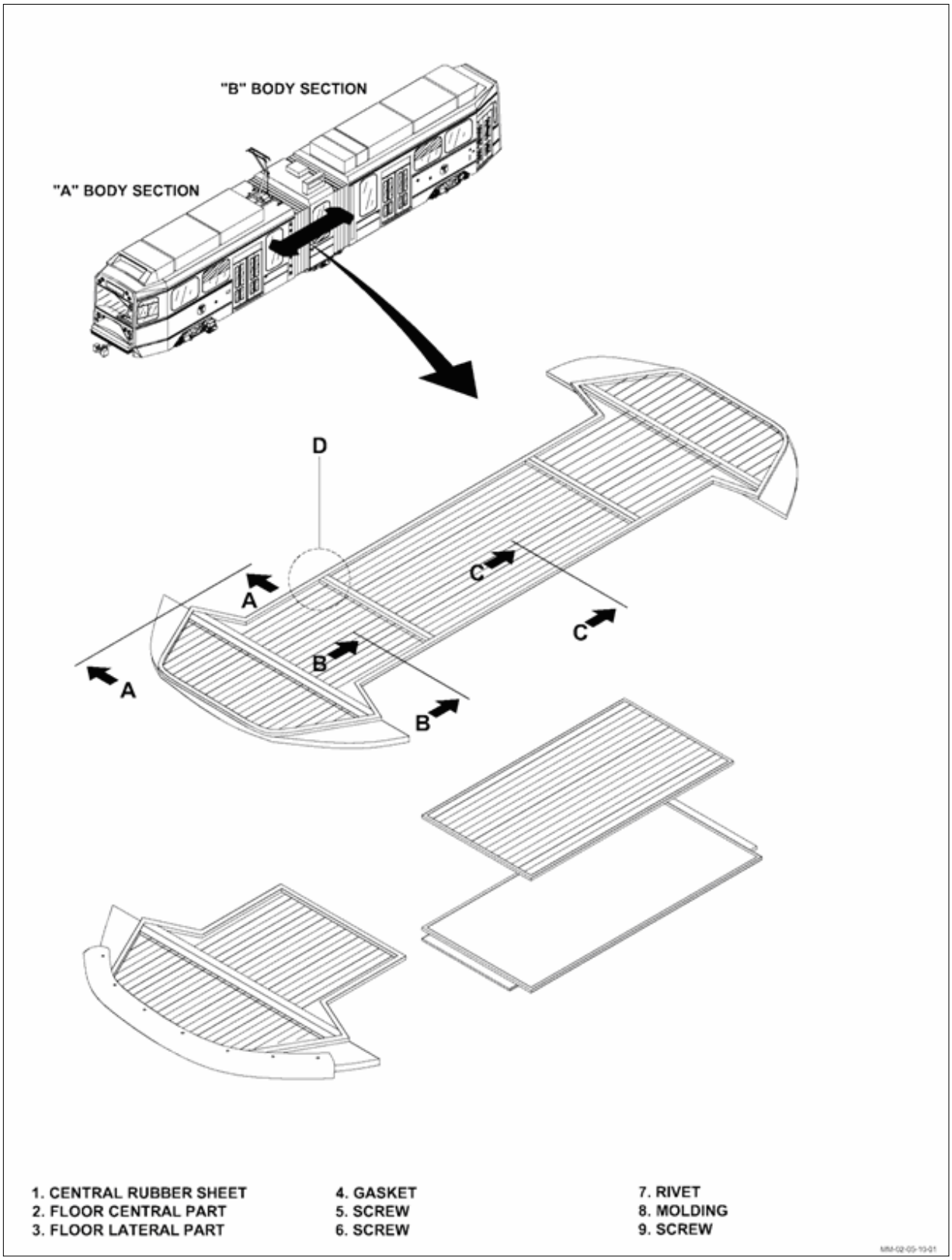


Figure 2-5.19 Floor – Installation (Sheet 1 of 2)

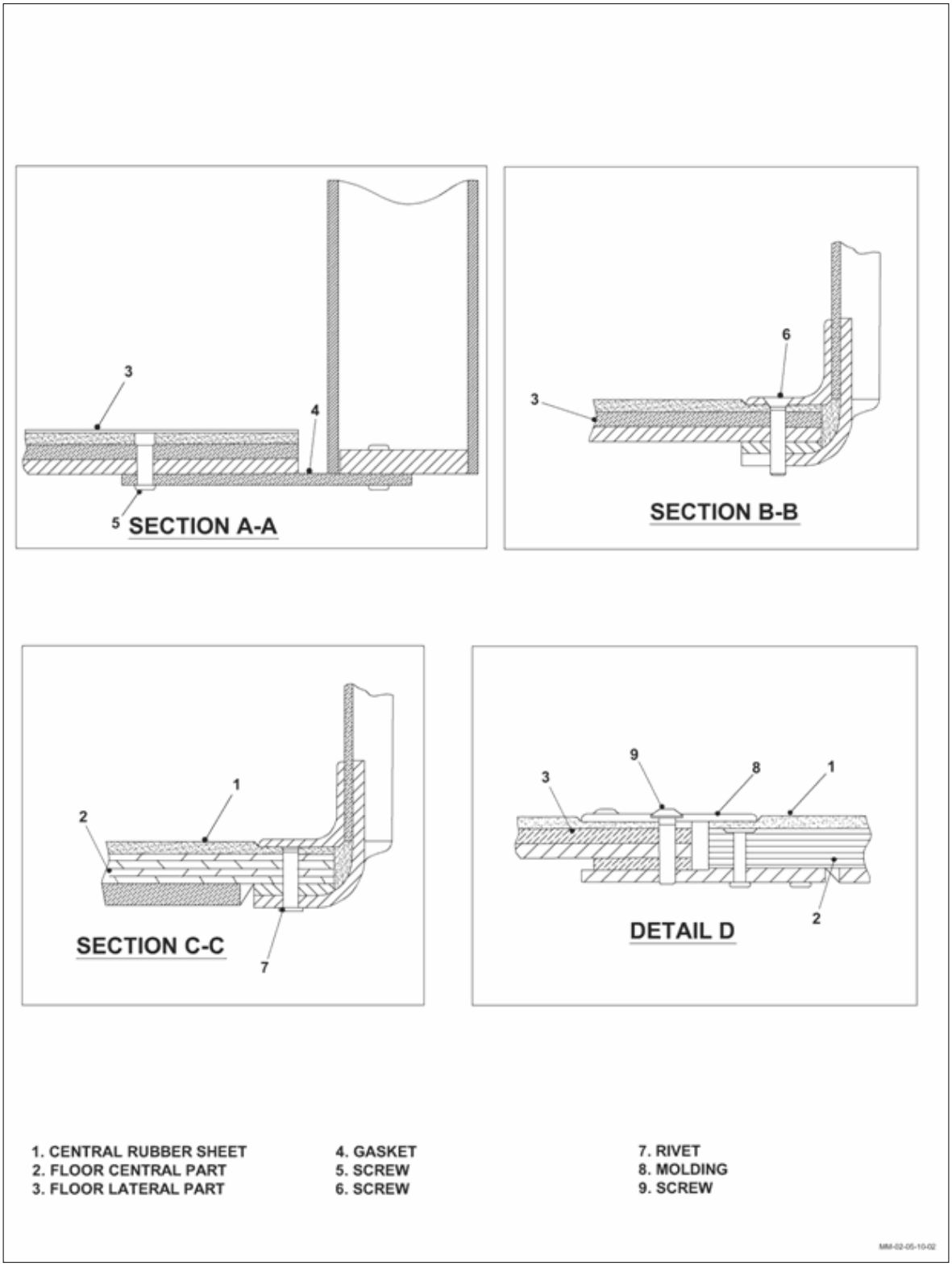


Figure 2-5.19 Floor – Installation (Sheet 2 of 2)

2-5.5 Upper Linkage

2-5.5.a Description and Theory of Operation

The Upper Linkage is designed to keep the Articulation Section structure in proper position with "A" and "B" Vehicle Section. The Articulation Section roof carries a vertical pivot pin (6) (Refer to Figure 2-5.20) connected to the saddle (5) which is linked to the two connecting rods (2, 7). Spherical bushings are provided to allow the upper linkage operation. The mounting supports (1, 8) are bolted to the related "A" and "B" section structure. Each connecting rod is provided with the Grease Fitting (3) and Grease Pipe (4) for spherical bushings greasing.

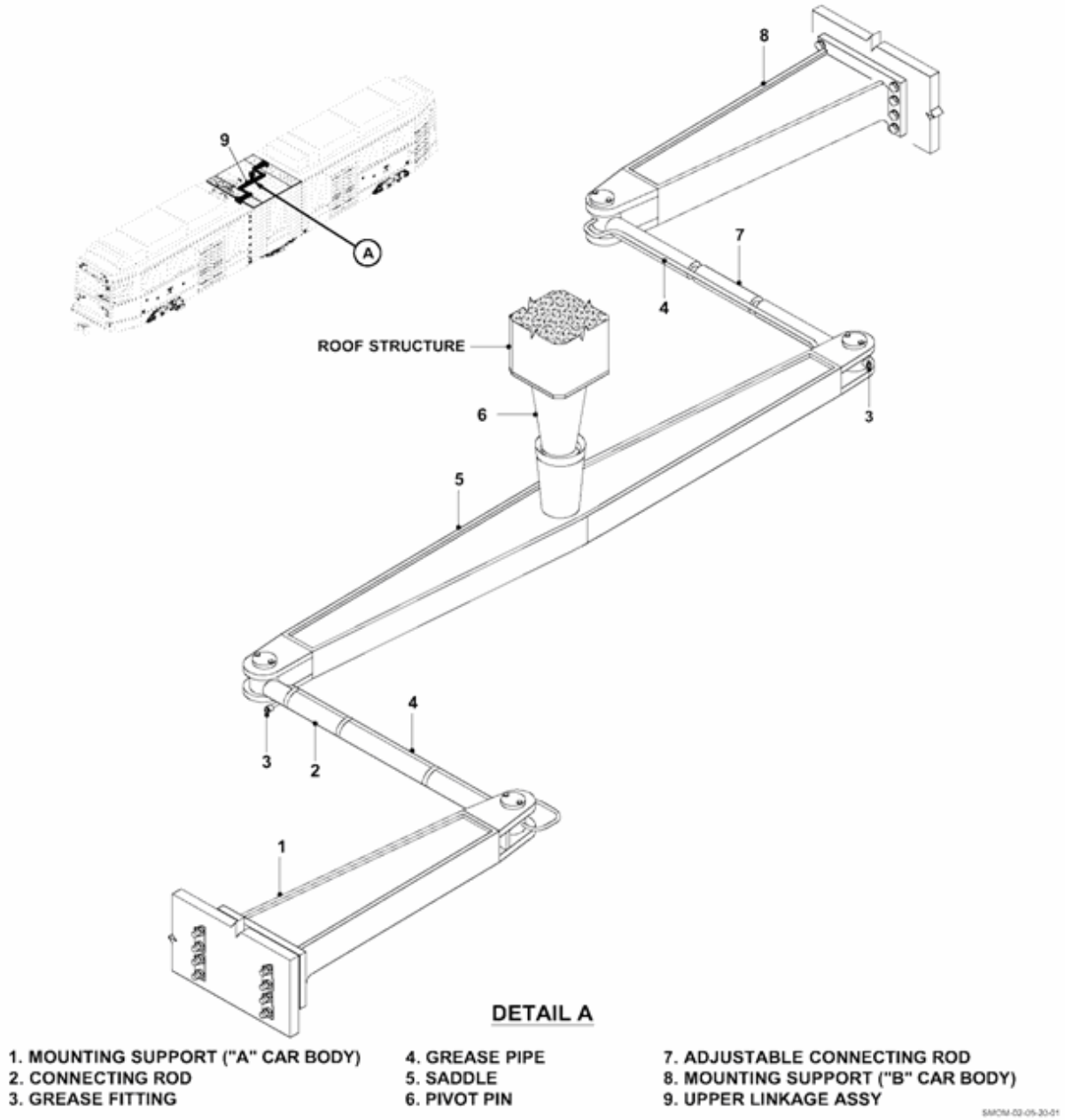


Figure 2-5.20 Upper Linkage - Typical Section

2-5.5.b Specific Safety Precautions

WARNING: **BEFORE PERFORMING UPPER LINKAGE MAINTENANCE PROCEDURES, DISCONNECT ELECTRICAL POWER FROM VEHICLE.**
IF IT IS NECESSARY TO OPERATE WITH THE ELECTRICAL POWER CONNECTED, THE CONTROL HANDLE SHOULD BE SET TO FULL SERVICE BRAKE POSITION AND THE WHEEL CHOCKS SHOULD BE USED TO PREVENT VEHICLE FROM MOVING.

WARNING: **UPPER LINKAGE ASSY WEIGHS 210 LB (90 KG). DURING THE DISASSEMBLY / REASSEMBLY PROCEDURES MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2-5.5.c Fault Isolation

For Upper Linkage Fault Isolation, refer to Table 2-5.10.

Table 2-5.10 Upper Linkage - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Carhouse inspection results indicate a mechanical failure.	1. Spherical bearing(s) damaged.	1. Replace. Refer to para 2-5.5.d
	2. Connecting rod(s) damaged.	1. Replace. Refer to para 2-5.5.d
	3. Spherical bearing(s) not adequately lubricate.	1. Grease spherical bearing(s). Refer to para 2-5.5.f.

2-5.5.d Disassembly

a) Upper Linkage Removal

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Suitable Forklift Truck Device (Min. capacity 250 Lb (113 Kg))
  2. Material (Not Applicable).
- **Procedure.**

  To Remove Upper Linkage, proceed as follows (Refer to Figure 2-5.21):

WARNING:	**UPPER LINKAGE ASSY WEIGHS 210 LB (90 KG). DURING THE DISASSEMBLY PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Remove Ceiling Panels (Refer to para 2-5.2.d b)).
3. Position Suitable Forklift Truck Device (Min. capacity 250 Lb (113 Kg)) under the upper linkage assy.
4. Put the fork on a level with saddle (18).
5. Remove screws (21) and washers (22) from pivot pin (23).
6. Remove bolts (9), safety plates (10) and nuts (11) from both mounting supports (7, 25) (“A”/”B” Body Sections).
7. Using the forklift truck device, remove upper linkage assy from Articulation Section.

b) Upper Linkage Disassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To Disassembly Upper Linkage, proceed as follows (Refer to Figure 2-5.21):

  1. Disconnect each mounting support (7, 25) as follows:
     a. Remove screws (6) and washers (5).
     b. Pull out cover (4).
     c. Remove screws (1) and safety plates (2).
     d. Pull out pin (3). If necessary a puller device can be used.
     e. Disconnect mounting support (7, 25) from related connecting rod (8, 24).
  2. Disconnect each connecting rod (8, 24) from saddle (18) as follows:
     a. Remove screws (17) and washers (16).
     b. Pull out covers (15).
     c. Remove screws (12) and safety plates (13).
     d. Pull out pins (14). If necessary a puller device can be used.
     e. Remove connecting rod (8, 24) from saddle (18).
  3. Remove screws (30), safety plate (29), cap (28), bushing (27) and sealing ring (26).
  4. Pull out pivot pin (23) from related saddle (18). If necessary a puller device can be used.
  5. Pull out bushing (19) and sealing ring (20).
  6. Remove from each connecting rod (8, 24) the spherical bearing (32) as follows:
     a. Remove elastic ring (seger) (31).
     b. Remove the spherical bearing (32). If necessary a puller device can be used.

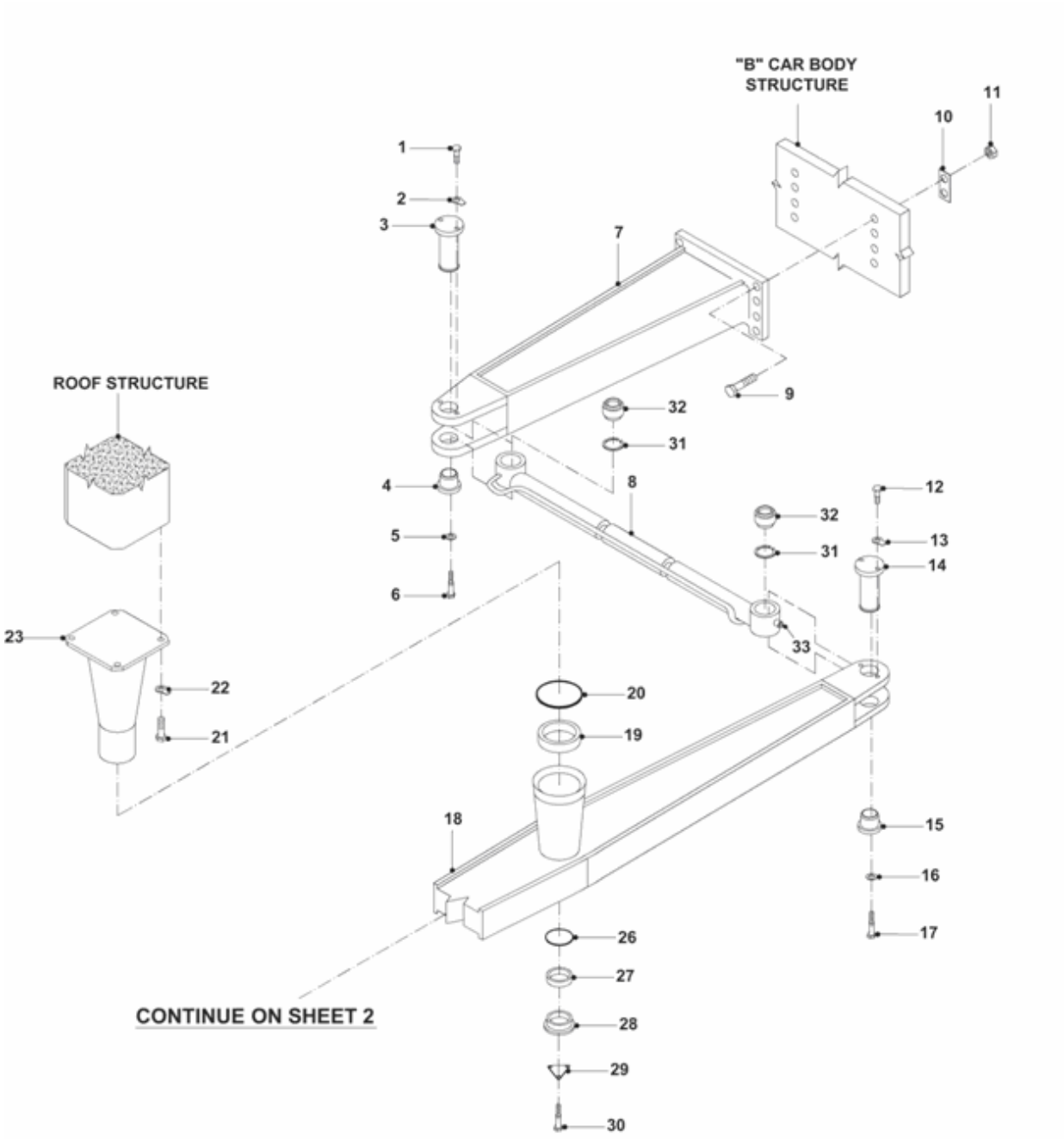


Figure 2-5.21 Upper Linkage - Disassembly (Sheet 1 of 2)

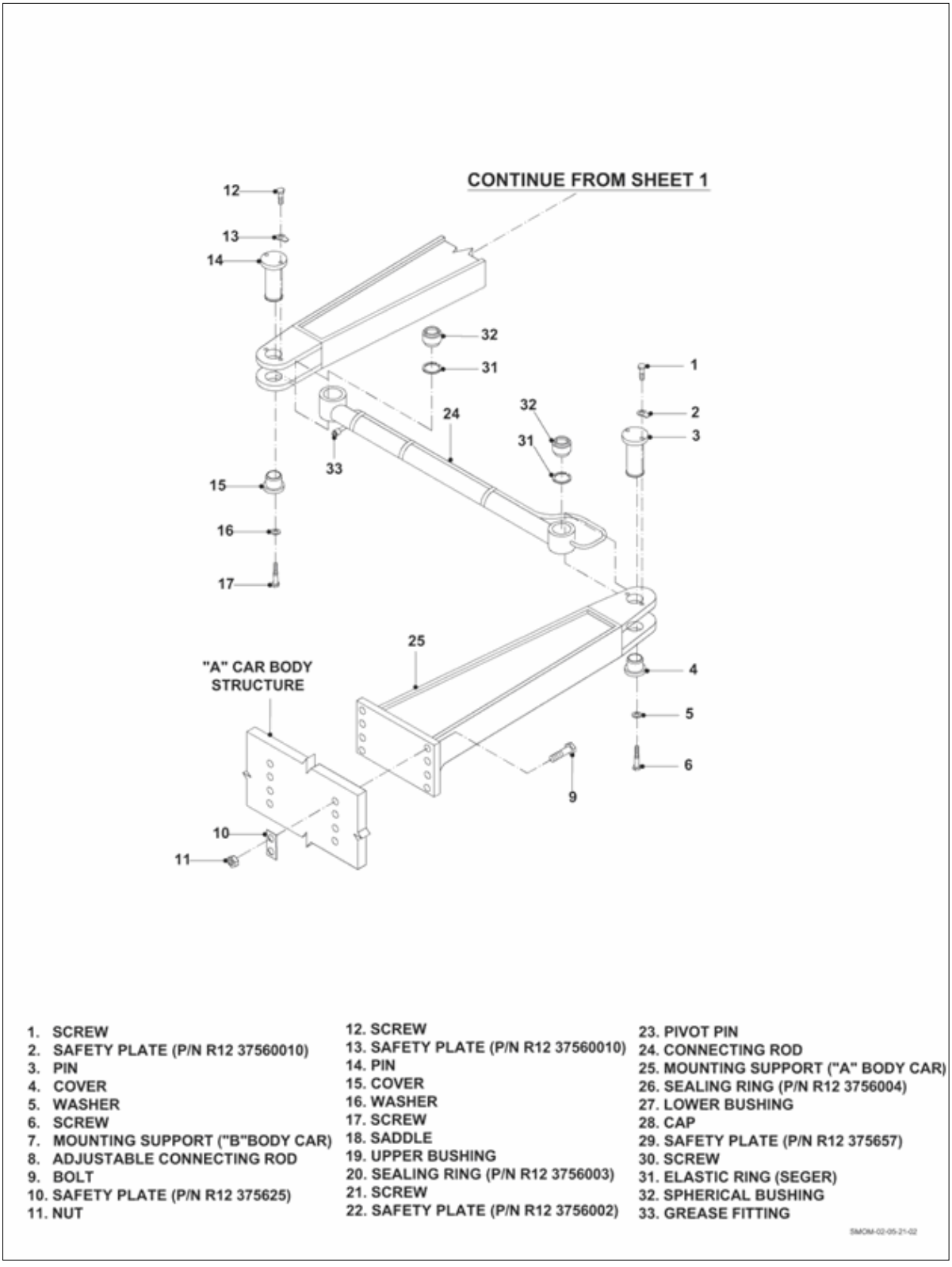


Figure 2-5.21 Upper Linkage - Disassembly (Sheet 2 of 2)

2-5.5.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Upper Linkage Components, proceed as follows:

  1. Clean and dry upper linkage components using mild detergent, compressed air and cleaning rags. (For MBTA approved Cleaning Products List refer to Section 1, Table 1-9).
  2. Protect the upper linkage components steel surfaces with engine oil.

b) Painting (Not Applicable)

2-5.5.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material.
     - Grease (general purpose type).
- **Procedure.**

  To Inspect Upper Linkage Components, proceed as follows:

  1. Inspect for damage, worn / deformation the following items:
     a. Mounting Supports.
     b. Connecting Rods.
     c. Saddle.
     d. Pivot Pin.
     e. Spherical Bushings.
     f. Mounting Hardware.
  2. Inspect saddle, connecting rods and mounting supports for free movement. If required, grease spherical bearing through grease fitting until fresh grease comes out.

3. Replace sealing rings and safety plates.
4. Damaged components should be replaced.
5. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-5.5.g Repair

The Upper Linkage is repaired by replacing the damaged / worn components.

2-5.5.h Reassembly

a) Upper Linkage Reassembly

- **Reference Information.**

1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
2. Material.
   - Safety Plate, P/N R12 37560010, Q.ty 8, (Figure 2-5.22, items 2, 13).
   - Safety Plate, P/N R12 375657, Q.ty 1, (Figure 2-5.22, item 29).
   - Sealing Ring, P/N R12 3756003, Q.ty 1, (Figure 2-5.22, item 20).
   - Sealing Ring, P/N R12 3756004, Q.ty 1, (Figure 2-5.22, item 26).
   - Grease (general purpose type).

- **Procedure.**

To Reassembly Upper Linkage, proceed as follows (Refer to Figure 2-5.22):

1. Install pivot pin (23) on the saddle (18) as follows:
   a. Insert bushing (19) and new sealing ring (20) on the pivot pin (23) and position them in the related saddle seat.
   b. Position new sealin ring (26), bushing (27), cap (28), new safety plate (29) and lock them by screws (30).
   c. Tighten screws (30) and lock them by bending safety plate (29).
2. Reassembly connecting rods (8, 24) as follows:
   a. Insert sherical bearing (32) in the related seat. If necessary a puller device can be used.
   b. Install elastic ring (seger) (31).
3. Install each connecting rod (8, 24) on the saddle (18) as follows:
   a. Position connecting rods (8, 24) in the related saddle seat as shown in the Figure 2-5.22, sheet 1.
   b. Insert pin (14). If necessary a puller device can be used.
   c. Install screws (12) and new safety plates (13).

d. Tighten screws (12) and lock them by bending safety plates (13).
e. Position cover (15).
f. Install and tighten screws (17) and washers (16).

4. Install each mounting support (7, 25) as follows:
   a. Position mounting support (7, 25) as shown in the Figure 2-5.22.
   b. Insert pin (3). If necessary a puller device can be used.
   c. Install screws (1) and new safety plates (2).
   d. Tighten screws (1) and lock them by bending safety plates (2).
   e. Position cover (4).
   f. Install and tighten screws (6) and washers (5).
   g. Grease Upper Linkage Assy using the recommended grease as follows:
      (1) Grease spherical bearing (32) through grease fittings (33) until fresh grease comes out.

b) Upper Linkage Installation

- **Reference Information.**

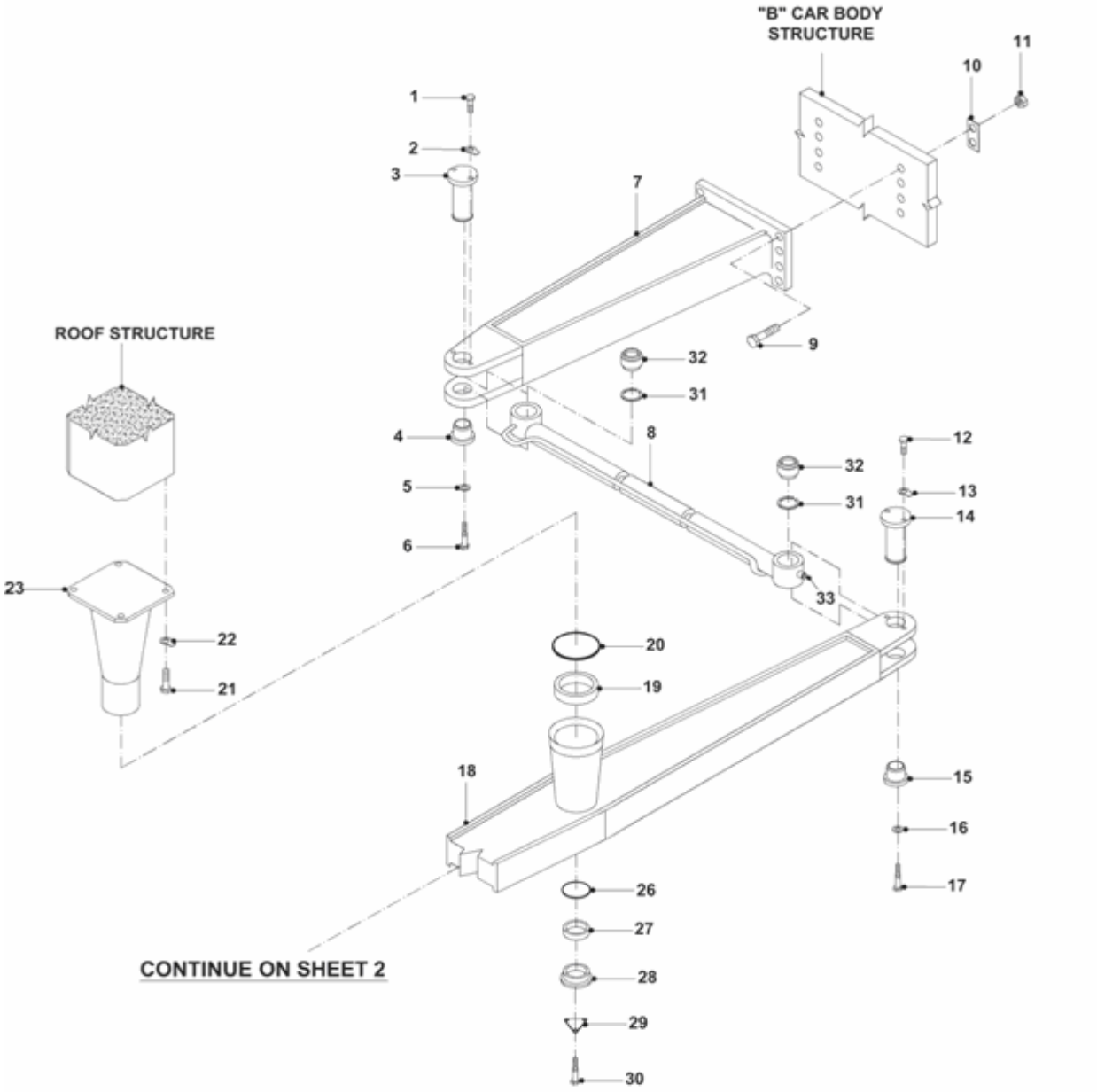
1. Tools /Equipment.
   - MBTA Overhaul Standard Tools Kit.
   - Suitable Forklift Truck Device (Min. capacity 250 Lb (113 Kg))
2. Material.
   - Safety Plate, P/N R12 375625, Q.ty 8, (Figure 2-5.22, item 10).
   - Safety Plate, P/N R12 3756002, Q.ty 4, (Figure 2-5.22, item 22).

- **Procedure.**

To Install Upper Linkage Assy, proceed as follows (Refer to Figure 2-5.22):

1. Position the upper linkage assy on the Suitable Forklift Truck Device (Min. capacity 250 Lb (113 Kg)).
2. Lift up the upper linkage assy and position it in related seat.
3. Install screws (21) and new safety plates (22).
4. Tighten screws (21) and lock them by bending safety plates (22).
5. Connect the upper linkage to the “A”/”B” Body Section as follows:
   a. Install bolts (9), new safety plates (10) and nuts (11).
   b. Tighten bolts (9) and lock them by bending safety plates (10).
6. Install Ceiling Panels (Refer to para 2-5.2.h b)).

2-5.5.i Adjustment/Test (Not Applicable)



1. SCREW
2. SAFETY PLATE (P/N R12 37560010)
3. PIN
4. COVER
5. WASHER
6. SCREW
7. MOUNTING SUPPORT ("B"BODY CAR)
8. ADJUSTABLE CONNECTING ROD
9. BOLT
10. SAFETY PLATE (P/N R12 375625)
11. NUT
12. SCREW
13. SAFETY PLATE (P/N R12 37560010)
14. PIN
15. COVER
16. WASHER
17. SCREW
18. SADDLE
19. UPPER BUSHING
20. SEALING RING (P/N R12 3756003)
21. SCREW
22. SAFETY PLATE (P/N R12 3756002)
23. PIVOT PIN
24. CONNECTING ROD
25. MOUNTING SUPPORT ("A" BODY CAR)
26. SEALING RING (P/N R12 3756004)
27. LOWER BUSHING
28. CAP
29. SAFETY PLATE (P/N R12 375657)
30. SCREW
31. ELASTIC RING (SEGER)
32. SPHERICAL BUSHING
33. GREASE FITTING

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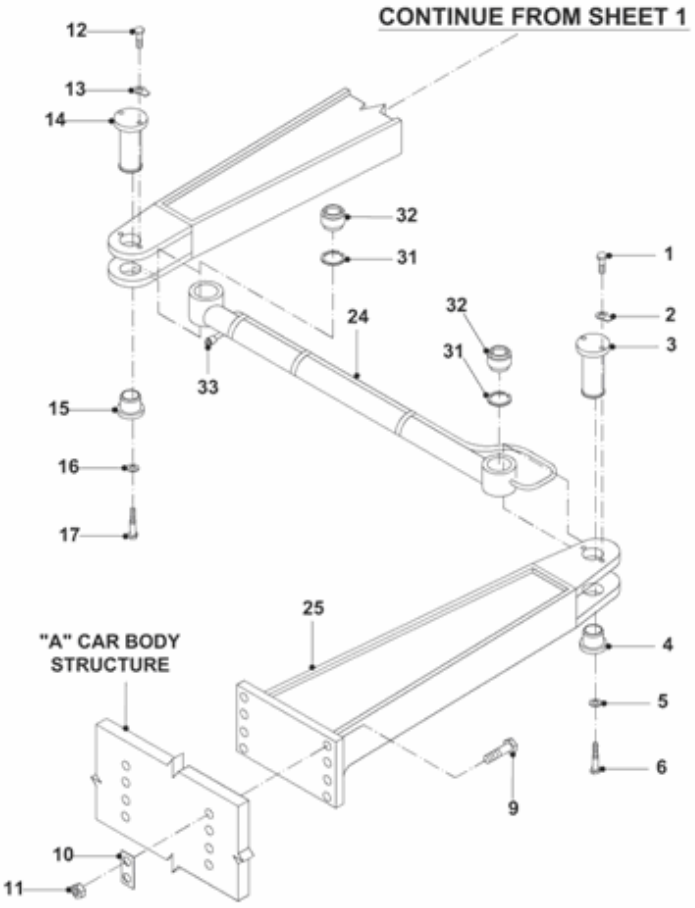
Figure 2-5.22 Upper Linkage - Reassembly (Sheet 1 of 2)



1. SCREW
2. SAFETY PLATE (P/N R12 37560010)
3. PIN
4. COVER
5. WASHER
6. SCREW
7. MOUNTING SUPPORT ("B"BODY CAR)
8. ADJUSTABLE CONNECTING ROD
9. BOLT
10. SAFETY PLATE (P/N R12 375625)
11. NUT
12. SCREW
13. SAFETY PLATE (P/N R12 37560010)
14. PIN
15. COVER
16. WASHER
17. SCREW
18. SADDLE
19. UPPER BUSHING
20. SEALING RING (P/N R12 3756003)
21. SCREW
22. SAFETY PLATE (P/N R12 3756002)
23. PIVOT PIN
24. CONNECTING ROD
25. MOUNTING SUPPORT ("A" BODY CAR)
26. SEALING RING (P/N R12 3756004)
27. LOWER BUSHING
28. CAP
29. SAFETY PLATE (P/N R12 375657)
30. SCREW
31. ELASTIC RING (SEGER)
32. SPHERICAL BUSHING
33. GREASE FITTING

SMOM-02-05-21-02

Figure 2-5.22 Upper Linkage - Reassembly (Sheet 2 of 2)

2-5.6 Roof Traction Cable System

2-5.6.a Description and Theory of Operation

The Roof Traction Cable System (Refer to Figure 2-5.23) is designed to supports the electrical cable conected from the "A" / "B" Body Sections. The Roof Traction Cable System carries two LH/RH arms (5, 6), connected on the support (10) through a pivot. Two springs (4) connected to the arms (5, 6) allow the movement of them round the pivot points; at each end side of arm is linked a traction cable (3, 7) connected to the mounting support (2, 8) in order to keep the Articulation Section structure in proper position with "A" and "B" Vehicle Section. The mounting supports (2, 8) are bolted to the related "A" and "B" section structure. The system is provided with brackets (1, 9, 11) and a holder (12) to allow the electrical connections installation.

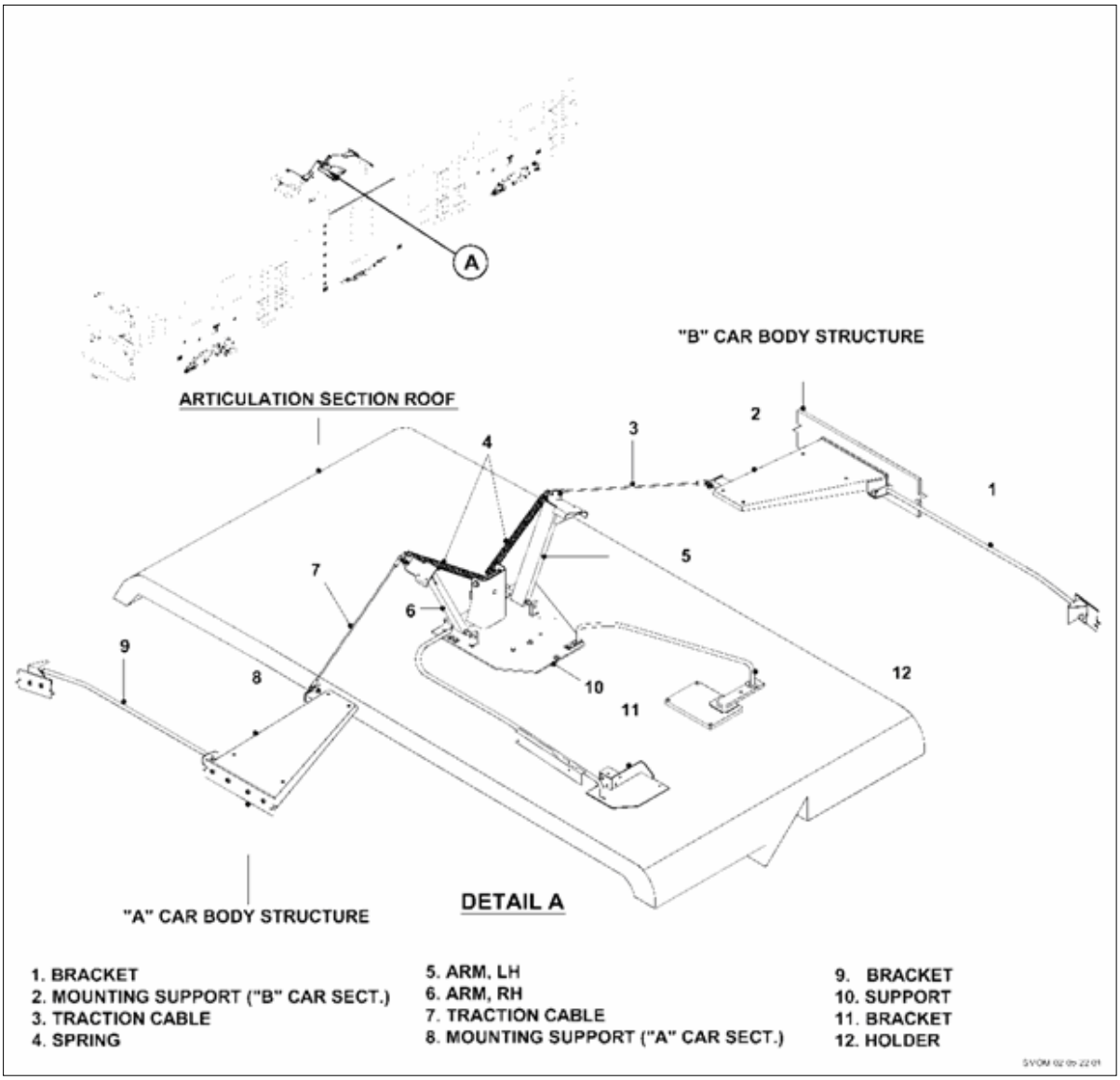


Figure 2-5.23 Roof Traction Cable System - Location

2-5.6.b Specific Safety Precautions

WARNING: **BEFORE CLIMBING ON THE ROOF TO PERFORM ROOF TRACTION CABLE SYSTEM MAINTENANCE PROCEDURES, OBSERVE THE MBTA REGULATIONS TO:**

- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

WARNING: **ROOF TRACTION CABLE SYSTEM ASSY WEIGHS 69.3 LB (31.4 KG). DURING THE DISASSEMBLY / REASSEMBLY PROCEDURES MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

2-5.6.c Fault Isolation

For Roof Traction Cable System Fault Isolation, refer to Table 2-5.11.

Table 2-5.11 Roof Traction Cable System - Fault Isolation

Malfunction Symptom	Probable Cause	Corrective Action
1. Carhouse inspection results indicate a mechanical failure.	1. Arm(s) deformed / damaged.	1. Replace. Refer to para 2-5.6.d.
	2. Traction Cable(s) damaged.	1. Replace. Refer to para 2-5.6.d.
	3. Spring(s) damaged.	1. Replace. Refer to para 2-5.6.d.
	4. Mounting Support(s) damaged.	1. Replace. Refer to para 2-5.6.d.
	6. Mounting Suppot attaching parts loosen.	1. Tighten loose attaching parts / Replace missing attaching parts. Refer to para 2-5.6.d.
	7. Main Support damaged.	1. Replace. Refer to para 2-5.6.d.
	8. Main Support attaching parts loosen.	1. Tighten loose attaching parts / Replace missing attaching parts. Refer to para 2-5.6.d.

2-5.6.d Disassembly

a) Roof Traction Cable System Removal

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (Min. capacity 100 Lb (45 Kg))
  2. Material (Not Applicable).

- **Procedure.**

  To Remove Roof Traction Cable System, proceed as follows (Refer to Figure 2-5.24):

> **WARNING:** **BEFORE CLIMBING ON THE ROOF TO PERFORM ROOF TRACTION CABLE SYSTEM DISASSEMBLY PROCEDURES, OBSERVE THE MBTA REGULATIONS TO:**
> **- DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
> **- GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
> **- DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
> **- LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
> **- PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
> **WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".**

> **WARNING:** **ROOF TRACTION CABLE SYSTEM ASSY WEIGHS 69.3 LB (31.4 KG). DURING THE DISASSEMBLY PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
2. Connect the Hoisting Device (Min. capacity 100 Lb (45 Kg)) to the roof traction cable system.

3. Put the hoisting device cable under stress.
4. Remove screws (23, 27) and washers (24, 25, 28, 29) from both side of holder (26).
5. Remove holder (26) from articulation section roof.
6. Remove screws (34) and washers (35, 36) from bracket (33).
7. At both system side, remove nut (13, 46) and disconnect LH/RH traction cable (15, 45) from LH/RH mounting support (14, 47).
8. Remove screws (30) and washers (31, 32) from base plate (58).
9. Using the hoisting device, remove roof traction cable system assy from Articulation Section.
10. At both “A” / ”B” Car Body side, proceed as follows to complete removal procedure:
    a. Remove screws (2, 55), washers (3, 7, 8, 48, 49, 56) and nuts (9, 50).
    b. Support bracket (1, 51), remove screws (6, 52) and washers (4, 5, 53, 54).
    c. Remove bracket (1, 51).
    d. Support LH/RH mounting support (14, 47), remove screws (12, 57) and washers (10, 11, 58, 59).
    e. Remove LH/RH support (14, 47).

b) Roof Traction Cable System Components Disassembly

- **Reference Information.**

1. Tools /Equipment.
    - MBTA Overhaul Standard Tools Kit.
2. Material (Not Applicable).

- **Procedure.**

To Disassembly Roof Traction Cable System, proceed as follows (Refer to Figure 2-5.24):

1. Remove springs (22) from related attaching points.
2. Remove nut (16, 44) and disconnect traction cable (15, 45).
3. Remove screw grubs (39) and disconnect LH/RH arm (17, 43) from related seat of base plate (58).
4. Pull out axle (21, 42) from arm.
5. Unscrew plunger (40) and remove it.
6. Remove nuts (18), washers (19, 20) and threaded bar (41).

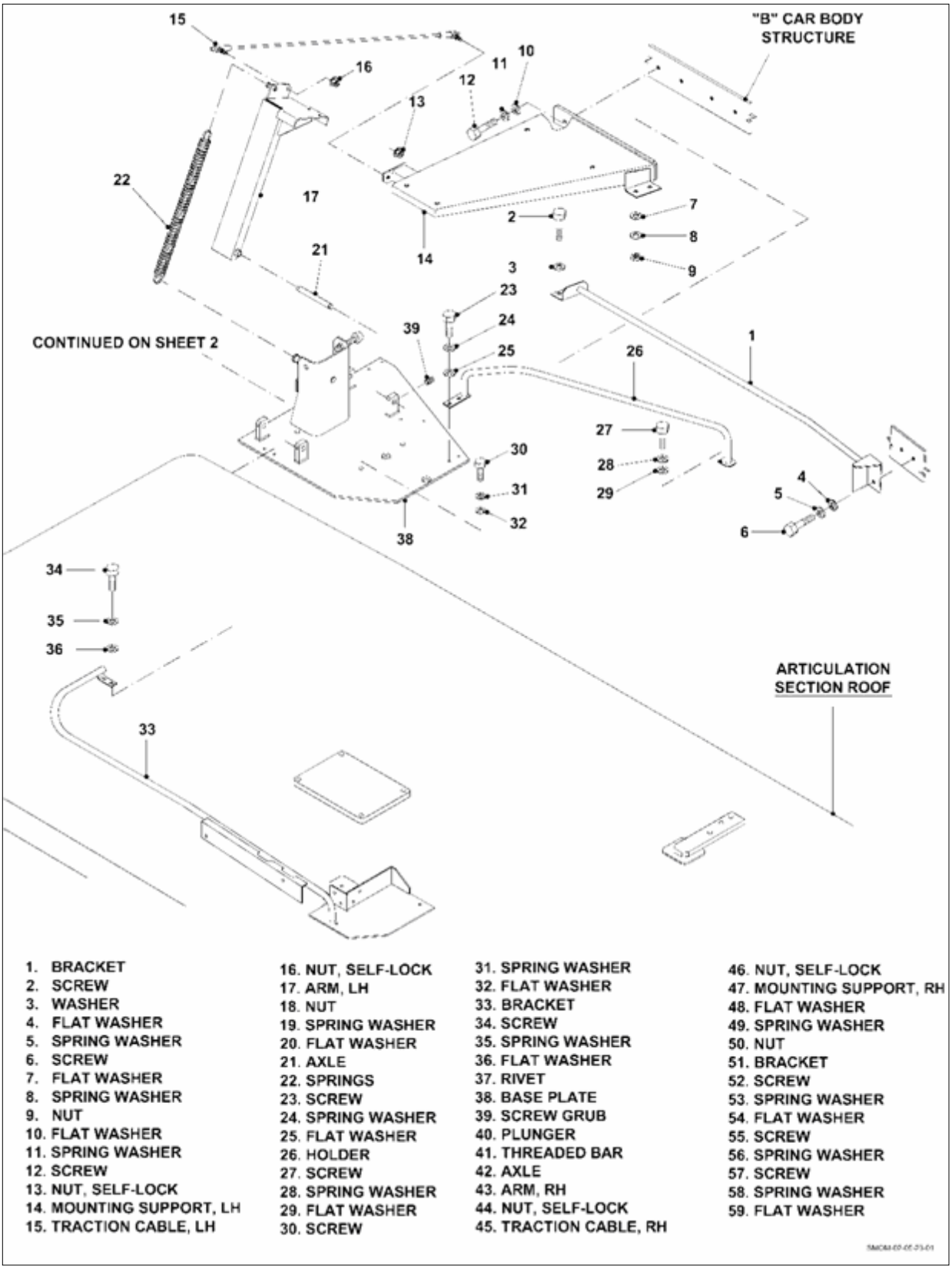


Figure 2-5.24 Roof Traction Cable System - Removal (Sheet 1 of 2)

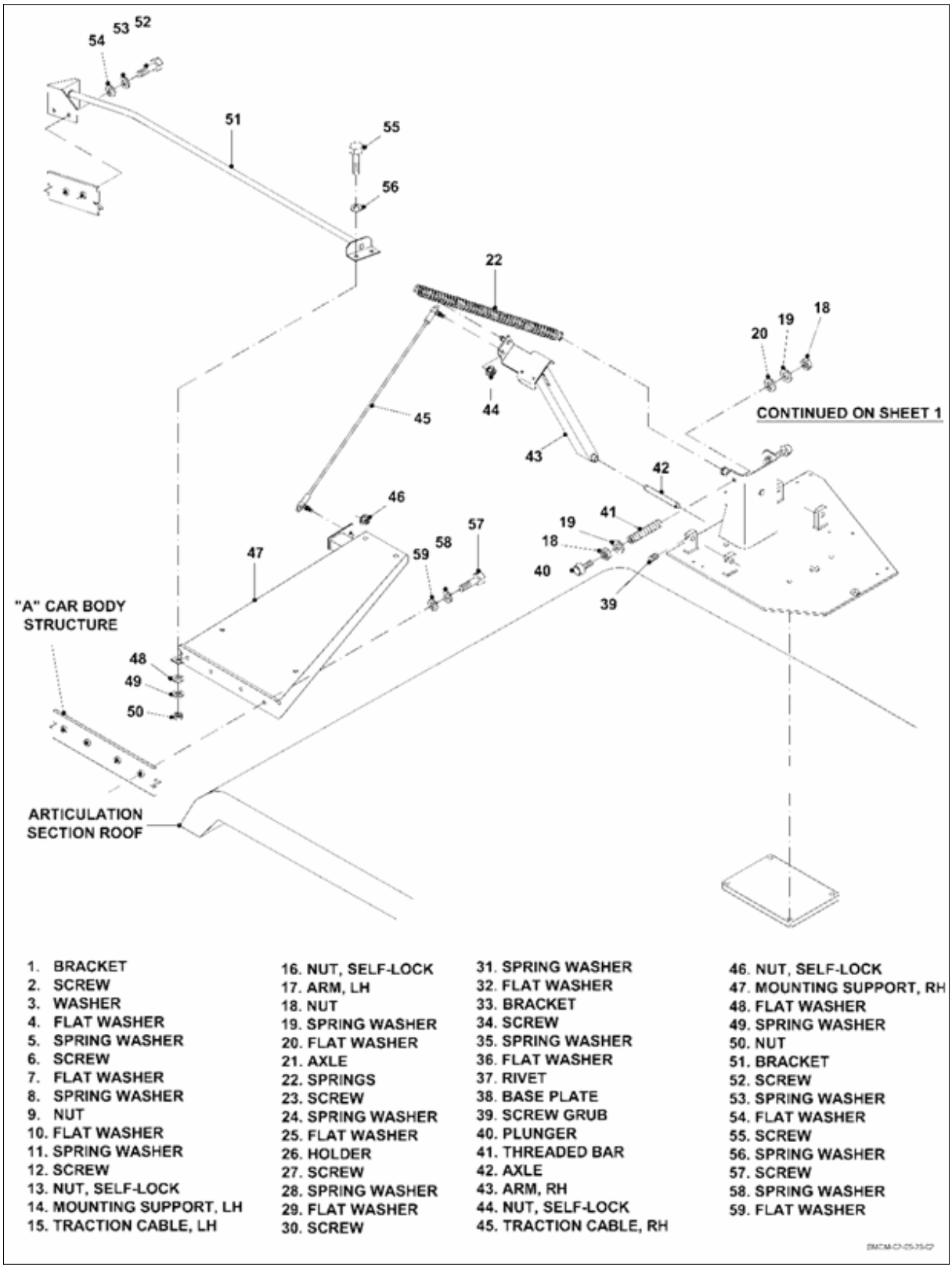


Figure 2-5.24 Roof Traction Cable System - Removal (Sheet 2 of 2)

2-5.6.e Cleaning/Painting

a) Cleaning

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA approved Cleaning Tools / Equipment (commercial).
  2. Material.
     - MBTA approved Cleaning Products (commercial) (Refer to Section 1 Table 1-9).
- **Procedure.**

  To Clean Roof Traction Cable System Components, proceed as follows:

  1. Clean and dry Roof Traction Cable System Components using mild detergent, compressed air and cleaning rags. (For MBTA approved Cleaning Products List refer to Section 1, Table 1-9).
  2. Protect the roof traction cable system components steel surfaces with engine oil.

b) Painting (Not Applicable)

2-5.6.f Inspection

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Roof Traction Cable System Components, proceed as follows:

  1. Inspect for damage, worn / deformation the following items:
     a. Mounting Supports.
     b. Traction Cables.
     c. Springs.
     d. Arms.
     e. Base Plate.
     f. Brackets / holders.
     g. Mounting Hardware.
  2. Damaged components should be replaced.

3. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-5.6.g Repair

The Roof Traction Cable System is repaired by replacing the damaged / worn components.

2-5.6.h Reassembly

a) Roof Traction Cable System Components Reassembly

- **Reference Information.**
  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material.
     - Grease (general purpose type).
- **Procedure.**

  To Reassembly Roof Traction Cable System Components, proceed as follows (Refer to Figure 2-5.25):

  1. Position threaded bar (41) and install nuts (18) and washers (19, 20).
  2. Install and tighten plunger (40).
  3. Insert axle (21, 42) inthe related seat of the LH/RH arm (17, 43).
  4. Position LH/RH arm (17, 43) in the related seat of base plate (58) and lock it by installing screw grubs (39).
  5. Position traction cable (15, 45) to the LH/RH arm (17, 43).
  6. Install and tighten nut (16, 44).
  7. Install springs (22) in the related attaching points.

b) Roof Traction Cable System Installation

WARNING: **BEFORE CLIMBING ON THE ROOF TO PERFORM ROOF TRACTION CABLE SYSTEM REASSEMBLY PROCEDURES, OBSERVE THE MBTA REGULATIONS TO:**
- **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
- **GROUND AND SECURE THE PANTOGRAPH DURING THE MAINTENANCE PROCEDURES.**
- **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
- **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
- **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
  WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".

WARNING: **ROOF TRACTION CABLE SYSTEM ASSY WEIGHS 69.3 LB (31.4 KG). DURING THE REASSEMBLY PROCEDURE MAKE SURE TO SUPPORTS THE UNIT TO PREVENT UNSAFE CONDITIONS.**

- **Reference Information.**

  1. Tools /Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Hoisting Device (Min. capacity 100 Lb (45 Kg))
  2. Material.
     - Grease (general purpose type).

- **Procedure.**

  To Install Roof Traction Cable System, proceed as follows (Refer to Figure 2-5.25):

  1. Connect the Hoisting Device (Min. capacity 100 Lb (45 Kg)) to the roof traction cable system.
  2. Position Roof Traction Cable System on the articulatio section roof.

3. Install screws (30) and washers (31, 32).
4. Tighten screws (30) to **49.7 ft-lb (67.4 Nm)**.
5. Position bracket (33) on the related seat of base plate (38).
6. Install screws (34) and washers (35, 36).
7. Tighten screws (34) to **49.7 ft-lb (67.4 Nm)**.
8. Position holder (26) and lock it by installing at both side screws (23, 27) and washers (24, 25, 28, 29).
9. Tighten screws (23, 27) to **49.7 ft-lb (67.4 Nm)**.
10. At both “A” / ”B” Car Body side, proceed as follows to complete installation procedure:
    a. Position LH/RH support (14, 47).
    b. Install screws (12, 57) and washers (10, 11, 58, 59).
    c. Tighten screws (12, 57) to **16.6 ft-lb (22.5 Nm)**.
    d. Position bracket (1, 51).
    e. Install screws (2, 55), washers (3, 7, 8, 48, 49, 56) and nuts (9, 50).
    f. Install screws (6, 52) and washers (4, 5, 53, 54).
    g. Tighten nuts (9, 50) to **10.3 ft-lb (14 Nm)**.
    h. Tighten screws (6, 52) to **16.6 ft-lb (22.5 Nm)**.
11. At both side, position LH/RH traction cable (15, 45) to the LH/RH mounting support (14, 47) and lock it by installing nut (13, 46).

2-5.6.i Adjustment/Test (Not Applicable)

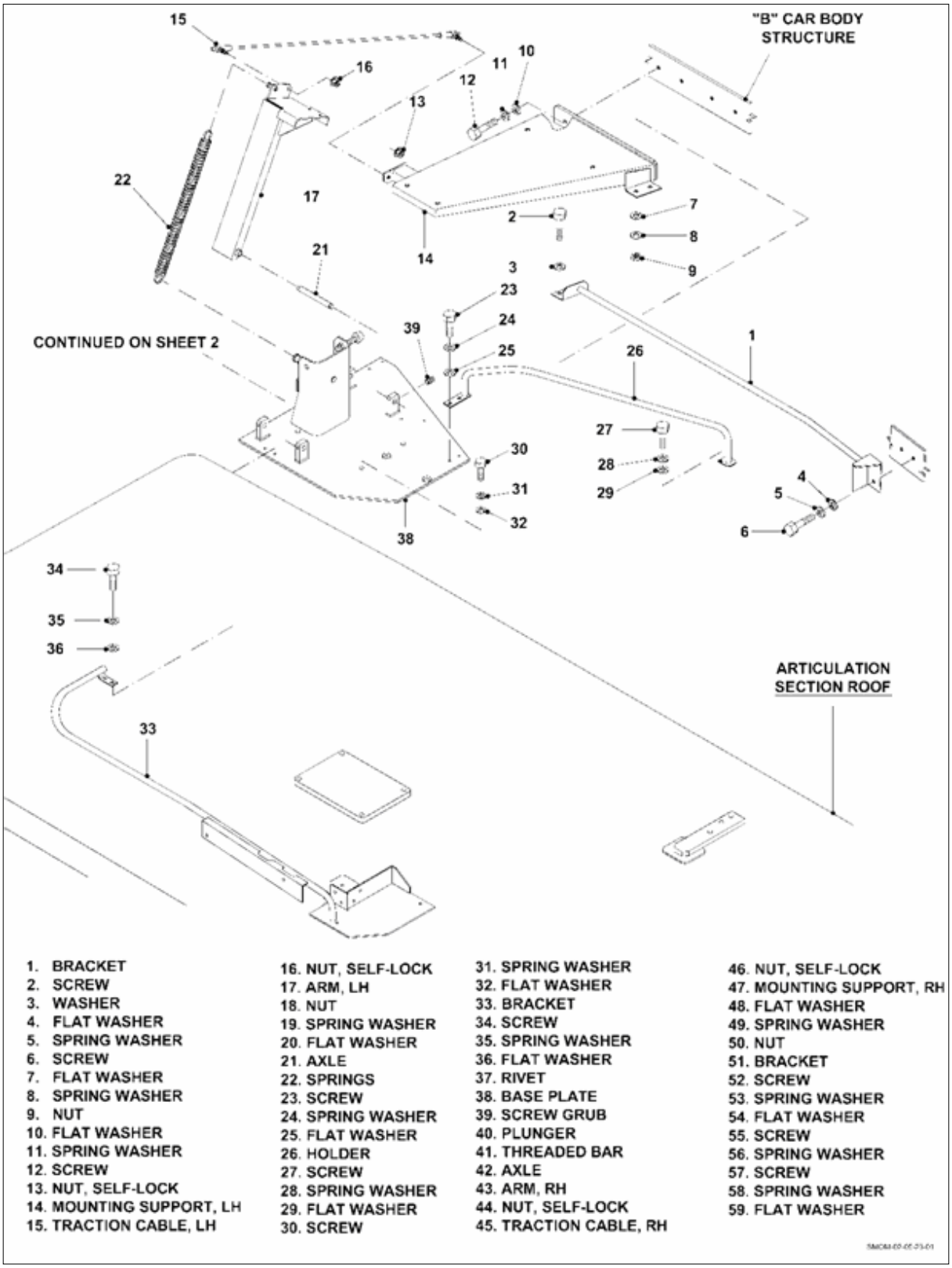


Figure 2-5.25 Roof Traction Cable System - Installation (Sheet 1 of 2)

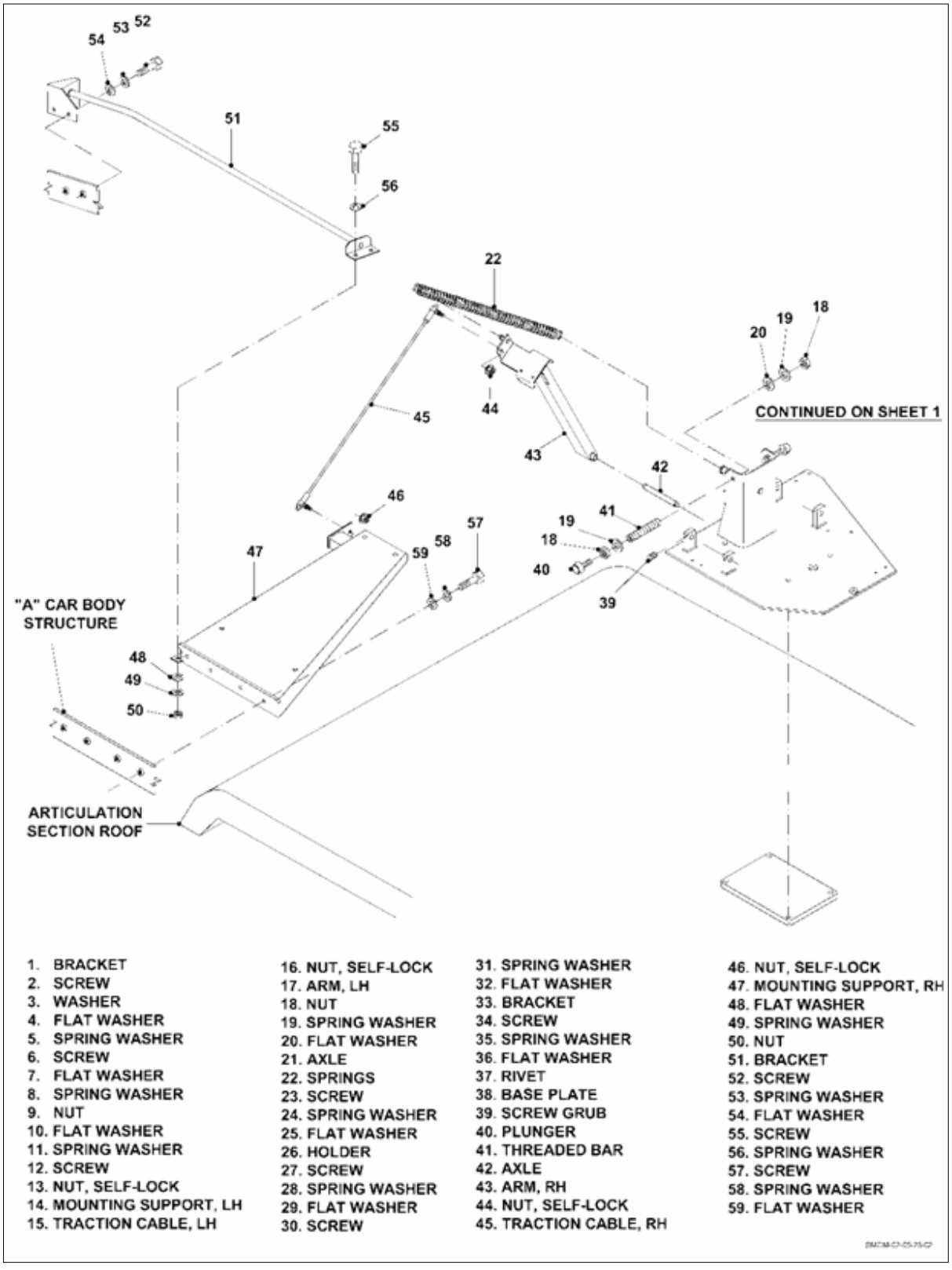


Figure 2-5.25 Roof Traction Cable System - Installation (Sheet 2 of 2)

2-6 Overhaul

2-6.1 General

Following are provided only the Overhaul Procedure. For Vehicle Assemblies / Components Description and Operation refer to the related para(s) 2-2 / 2-3 / 2-4 / 2-5.

2-6.2 Car Body - Overhaul

The Car Body Overhaul is carried out by performing the detailed Assemblies / Components inspection procedures following provided. In addition the references for the corrective actions (repair/replacing) are provided.

2-6.2.1 Main Underframe

To perform Main Underframe Overhaul proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect Anticlimber for damages/deformation and correct installation.
  4. Inspect structure for cracks, dents or otherwise damages.
  5. Inspect vehicle systems equipment for correct installation.
  6. Inspect for oil/compressed air leakage.
  7. Inspect all tubes/pipings for damage, leakage and correct installation.
  8. Inspect articulation support for damage/deformation loose or missing hardware. If found report to Supervisor.
  9. Inspect Articulation Support for presence of debris. If found report to Supervisor.
  10. If necessary perform the Repair procedure refer to para 2-2.1.g.
  11. If necessary perform the Painting procedure refer to para 2-2.1.e b).
  12. For Vehicle System Assemblies / Components Removal /Installation procedures refer to the related SMOM section.
  13. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.2 End Frame

To perform End Frame Overhaul proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect vehicle systems equipment for correct installation.
  4. Inspect structure for cracks, dents or otherwise damages.
  5. Remove Interior Liners (Refer to para 2-3.2.d).
     a. Inspect structure condition.
     b. Check for water leakage.
     c. Inspect vehicle systems equipment / cables for damage and correct installation.
  6. If necessary perform the Repair procedure refer to para 2-2.2.g.
  7. If necessary perform the Painting procedure refer to para 2-2.2.e b).
  8. For Vehicle System Assemblies / Components Removal /Installation procedures refer to the related SMOM section.
  9. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.3 Sidewalls

To perform each Sidewall Overhaul, proceed as follows:

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect structure for cracks, dents or otherwise damages.
  4. Inspect vehicle systems equipment for correct installation.
  5. Remove Interior Liners (Refer to para 2-3.2.d).
  6. Remove Passenger Seats (Refer to para 2-3.2.d).
     a. Inspect structure condition.
     b. Check for water leakage.
     c. Inspect vehicle systems equipment / cables for damage and correct installation.
  7. Inspect Folding Steps for damages/deformations.
  8. Using the Maintenance Key verify the correct operation of the step Key Latches.
  9. If necessary perform the Repair procedure refer to para 2-2.3.g.
  10. If necessary perform the Painting procedure refer to para 2-2.3.e b).
  11. For Vehicle System Assemblies / Components Removal /Installation procedures refer to the related SMOM section.
  12. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.4 Roof

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Roof Overhaul proceed as follows:

> **WARNING:** **BEFORE CLIMBING ON THE ROOF, OBSERVE THE MBTA REGULATIONS TO:**
> - **DISCONNECT THE VEHICLE FROM ELECTRICAL OVERHEAD LINE (CATENARY) BY LOWERING PANTOGRAPH.**
> - **GROUND AND SECURE THE PANTOGRAPH DURING THE INSPECTION PROCEDURE.**
> - **DISCONNECT POWER FROM ELECTRICAL OVERHEAD LINE (CATENARY).**
> - **LOCK THE CATENARY ISOLATING SWITCH IN THE OPEN POSITION.**
> - **PUT A SIGN ON THE ISOLATING SWITCH AS FOLLOWS:**
>
> **WARNING: "PEOPLE WORKING ON VEHICLE ROOF – DO NOT OPERATE THE SWITCH".**

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect structure for cracks, dents or otherwise damages.
  4. Inspect vehicle system equipment for correct installation.
  5. Remove Ceiling Panels (Refer to para 2-3.2.d).
     a. Inspect structure condition.
     b. Check for water leakage.
     c. Inspect vehicle systems equipment / cables for damage and correct installation.
  6. Inspect Antiskid Roof Mat for damage / deformation, sign of breakaway / bubbles or wrinkles.
     If found report to Supervisor before perform the Repair (Refer to para 2-2.4.g b)).

7. Inspect Antiskid Mat Edge Sealing Bead:
   if found report to Supervisor before perform the Repair (Refer to para 2-2.3.g c)).
8. Inspect Cable Trays for damage / loose or missing hardware.
9. Inspect (Cable) Trays Cables Protection Gaskets for damage / loose. Apply a light coat of Vaseline gel onto each Cables Protection Gaskets to protect it from Air / Road / Subway Tunnel contamination (as metallic dust).
10. Inspect cable connectors for proper conditions and installation.
11. Inspect vehicle systems equipment labels for correct installation, damage / missing.
12. Inspect HVAC roof duct gaskets and cable penetrations for damage / deformations. Refer to Section 5, para 5-2.1.f for duct gaskets detailed maintenance.
13. Inspect for debris obstruction in the roof gutters / equipment piping drainage. If found remove it (refer to previous Cleanig procedure, steps 5 and 6).
14. If necessary perform the Repair procedure refer to para 2-2.4.g.
15. If necessary perform the Painting procedure refer to para 0 b).
16. For Vehicle System Assemblies / Components Removal /Installation procedures refer to the related SMOM section.
17. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.5 Windows and Windshield

2-6.2.5.1.a Windows

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).

Fixed Windows

- **Procedure.**

  To perform each Window Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect glass and gaskets for damage/deformation.
  3. Inspect frame for damage and correct installation.
  4. Inspect for water leakage.
  5. If necessary perform the Repair procedure refer to para 2-2.5.1.g.
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

Sliding Cab Window

- **Procedure.**

  To perform each Sliding Cab Window Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect glass and gaskets for damage/deformation.
  3. Inspect frame for damage and correct installation.
  4. Inspect slides/latch devices for damage/deformation.
  5. Inspect slides for free movement and the latch devices for correct installation.
  6. Inspect for water leakage.
  7. If necessary perform the Repair procedure refer to para 2-2.5.1.g.
  8. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.5.2.a Windshield

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Windshield Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Check glass and gaskets for damage/deformation and correct installation.
  3. Check frame for damage and correct installation.
  4. Check for water leakage.
  5. If necessary perform the Repair procedure refer to para 2-2.5.2.g.
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.6 External Panels

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
     - Maintenance Key.
  2. Material (Not Applicable).

Hinged Panels (FWD, Battery and Drum Switch Cover Panels)

- **Procedure.**

  To perform each Hinged Panel Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect panels for damage/deformation and correct installation.
  3. Check paint for damage / corrosion.
  4. Inspect latches for damage/deformation.
  5. Using the Maintenance Key inspect square key latch for correct operation.
  6. Inspect paint for damage/corrosion.
  7. Inspect for corrosion between hinges and body structure.
  8. Inspect Covers Gasket for damage /deformation / watertight defects. Replace as necessary. Once the Gasket inspection / replacement is completed, apply a light coat of Vaseline gel onto the Gasket to protect it from Air / Road /Subway Tunnel contamination (as metallic dust).
  9. If necessary perform the Repair procedure refer to para 2-2.6.g.
  10. If necessary perform the Painting procedure refer to para 2-2.6.e b).
  11. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

Bolted Panels

- **Procedure.**

  To perform each Bolted Panel Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Check panels for damage / deformation and correct installation.
  3. Check paint for damage / corrosion.
  4. If necessary perform the Repair procedure refer to para 2-2.6.g.
  5. If necessary perform the Painting procedure refer to para 2-2.6.e b).
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.2.7 Fairings and Deflectors

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Fairings and Deflectors Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect Fairings/Deflectors for damage/deformation.
  3. Inspect paint for damage/corrosion.
  4. If necessary perform the Repair procedure refer to para 2-2.7.g.
  5. If necessary perform the Painting procedure refer to para 2-2.7.e b).
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3 Interior Overhaul

The Interior Overhaul is carried out by performing the detailed Assemblies / Components inspection procedures following provided. In addition the references for the corrective actions (repair/replacing) are provided.

2-6.3.1 Stanchion and Handrail

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each Stanchion and Handrail Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect Stanchions and Handrails for dent/damage.
  3. Inspect Stanchions and Handrails for correct installation.
  4. If necessary perform the Repair procedure refer to para 2-3.1.g.
  5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.2 Liner and Ceiling Panel

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each Liner and Ceiling Panel Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect Liners and Ceiling Panels for dents, crackes, scratches or burns.
  3. Inspect Liners and Ceiling Panels for correct installation.
  4. Inspect Hinges /Latch for correct operations. If necessary adjust clearance. (Refer to para 2-3.2.d).
  5. Inspect Safety Chains for loose / missing hardware and proper operation by opening the relevant Ceiling Panel using Maintenance Key.

6. If necessary perform the Repair procedure refer to para 2-3.2.g.
7. If necessary perform the Painting procedure refer to para 2-3.2.e b).
8. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.3 Entrance Walls

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

Cab Entrance Wall

- **Procedure.**

  To perform each Cab Door Entrance Wall Overhaul proceed as follows :

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect Entrance Wall for dents, cracks or otherwise damages.
  3. Inspect Entrance Wall for loose / missing and correct installation.
  4. Inspect Floor Lights (Front Door) for loose / missing and correct installation.
  5. If necessary perform the Repair procedure refer to para 2-3.3.g.
  6. If necessary perform the Painting procedure refer to para 2-3.1.e b).
  7. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

Low Floor Section Entrance Walls

- **Procedure.**

  To perform each Low Floor Section Entrance Wall Overhaul proceed as follows :

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect Low Floor Section Entrance Wall for dents, cracks or otherwise damages.
  3. Inspect Low Floor Section Entrance Wall for loose / missing and correct installation.
  4. If necessary perform the Repair procedure refer to para 2-3.3.g.
  5. If necessary perform the Painting procedure refer to para 2-3.1.e b).

6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.4 Passenger Seat

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each Passenger Seat Overhaul, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect passenger seat assemblies for scratches, cracks or damage.
  3. Inspect seat for correct installation.
  4. If necessary perform the Repair procedure refer to para 2-3.4.g.
  5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.5 Floor

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Floor Overhaul, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations:
  2. Inspect rubber floor and moldings for cracks, burn and correct installation.
  3. Inspect floor traps for cracks, burns and correct installation.
  4. Inspect rubber floor for free of indentations, particularly on steps and door opening areas.
  5. If necessary perform the Repair procedure refer to para 2-3.5.g.
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.6 Inspection Door

- **Reference Information.**
  1. Tools / Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect each Inspection Door proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect panels and related hinge for damage/deformation and correct installation.
  4. Inspect latches for damage/deformation.
  5. Using the Maintenance Key verify the correct latch operation.
  6. Inspect paint for damage/corrosion.
  7. Inspect for corrosion between hinges and body structure.
  8. If necessary perform the Repair procedure refer to para 2-3.6.g.
  9. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.7 Air Duct

- **Reference Information.**
  1. Tools /Equipment.
     - Maintenance Key.
     - Suitable Device (Minimum Capacity 300 Lb (135 Kg))
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Air Duct proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect valance for damage/deformation and correct installation.
  3. Inspect air duct structure for damage/deformation and correct installation.
  4. If necessary perform the Repair procedure refer to para 2-3.7.g.

5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.8 Cable Tray

- **Reference Information.**
  1. Tools / Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Cable Tray proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect tray for damage/deformation and correct installation.
  3. Inspect paint for damage/corrosion.
  4. If necessary perform the Repair procedure refer to para 2-3.8.f.
  5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.3.9 Cable Tray

- **Reference Information.**
  1. Tools / Equipment.
     - Maintenance Key.
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Heater Protection proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect heater protection for damage/deformation and correct installation.
  3. If necessary perform the Repair procedure refer to para 2-3.9.g.
  4. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4 Operator's Cab Overhaul

The Operator's Cab Overhaul is carried out by performing the detailed Assemblies / Components inspection procedures following provided. In addition the references for the corrective actions (repair/replacing) are provided.

2-6.4.1 Operator's Seat

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each Operator's Seat Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect back cushion and soft seat for scratch or otherwise damage.
  3. Inspect pedestal, lever and pedal for dent, cracks or otherwise damage.
  4. Inspect seat for correct installation and operation.
  5. If necessary perform the Repair procedure refer to para 2-4.1.g.
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.2 Windshield Wiper Inspection

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure (Windshield Wiper System Components).**

  To perform Windshield Wiper System Components Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect wiper blade for damage. As necessary, replace the blade. Refer to para 2-4.2.f).

3. Inspect other windshield wiper components for damage and correct installation.
4. If necessary perform the Repair procedure refer to para 2-4.2.g.
5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.3 Mirrors

2-6.4.3.1.a External Rear-View Mirror

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each External Rear-View Mirror Overhaul, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect mirror for cracks or damages.
  3. Inspect mirror for correct installation.
  4. Using a Tape Measure, check and mark onto it the distance between one side-point of the Mirror Steamlined with respect to one point of the Vehicle side .
  5. Cycle the Front Door several times
  6. Using the same Tape Measure previously marked, re-check and mark onto it the distance between the same side-point of the Mirror Steamlined with respect to the same point of the Vehicle side.
  7. Compare the two marks onto the Tape Measure per the following criteria:

Difference (between two marks)	**Inspection Result**
< 0.039 inch	The mirror holds its position
> 0.039 inch	The mirror doesn't holds its position Adjust Mirror by tightening the relevant hardware / Replace Mirror.

8. If necessary perform the Repair procedure refer to para 2-4.3.1.g.
9. If necessary perform the Painting procedure refer to para 2-4.3.1.e b).
10. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.3.2.a Inner Rear-View Mirror

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform each Inner Rear-View Mirror Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect mirror for cracks or damage.
  3. Inspect mirror for correct installation.
  4. If necessary perform the Repair procedure refer to para 2-4.3.1.g.
  5. If necessary perform the Painting procedure refer to para 2-4.3.1.e b).
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.4 Cab Dividing Wall

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Cab Dividing Wall Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Cab Dividing Wall components for dent, cracks or otherwise damage.

3. Inspect door light for correct installation.
4. Check cab door moves freely.
5. Inspect Cab Dividing Wall for correct installation.
6. Check Cab Dividing Wall Panels conditions and correct installation.
7. If necessary perform the Repair procedure refer to para 2-4.4.g.
8. If necessary perform the Painting procedure refer to para 2-4.4.e b).
9. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.5 Cab Console and Panels

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform the Cab Console and Panels Overhaul, proceed as follows:
  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Cab Console and Panels surfaces for dents, cracks or otherwise damages.
  3. Inspect Cab Console components for correct installation.
  4. Inspect Panels for correct installation.
  5. Inspect Movable Footrest for conditions and correct installation.
  6. If necessary perform the Repair procedure refer to para 2-4.5.g.
  7. If necessary perform the Painting procedure refer to para 0 b).
  8. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.4.6 Windshield Heater System Components

- **Reference Information.**

  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).

- **Procedure.**

  To perform Windshield Heater System Components Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Transformer (6T01) for loose / missing hardware and correct installation.
  3. Inspect Transformer (6T01) for damaged insulation, loose terminals or signs of overheating.
  4. Inspect Transformer Terminal board for damages, cracks, burns / missing hardware and correct installation.
  5. Inspect electrical wires for damaged insulation, loose terminals or signs of overheating.
  6. If necessary perform the Repair procedure refer to para 2-4.6.g.
  7. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5 Articulation Section "C" Overhaul

The Articulation Section "C" Overhaul is carried out by performing the detailed Assemblies / Components inspection procedures following provided. In addition the references for the corrective actions (repair/replacing) are provided.

2-6.5.1 Articulation Section Structure

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Articulation Section Structure Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect paint for damage/corrosion.
  3. Inspect structure for cracks, dents or otherwise damages.
  4. Inspect vehicle system equipment for correct installation.
  5. Remove Articulation Section Interior Liners and Ceiling Panels (Refer to para 2-5.2.d).
     a. Inspect structure condition.
     b. Check for water leakage.
     c. Inspect vehicle systems equipment / cables for damage and correct installation.
  6. If necessary perform the Repair procedure refer to para 2-5.1.g.
  7. If necessary perform the Painting procedure refer to para 2-5.1.e b).
  8. For Vehicle System Assemblies / Components Removal /Installation procedures refer to the related SMOM section.
  9. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5.2 Articulation Section Interiors

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Articulation Section Interiors Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect Angular Walls, Liners, Ceiling Panels and Fiberglass Boxes for dents, cracks, scratches or burns.
  3. Inspect Angular Walls, Ceiling Panels and Fiberglass Boxes for correct installation.
  4. If necessary perform the Repair procedure refer to para 2-5.2.g.
  5. If necessary perform the Painting procedure refer to para 2-5.2.e b).
  6. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5.3 Bellows

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
     - Wheel Chocks.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Bellows (External and Inner) Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect bellow for damage.
  3. Inspect spring tie rod for stretch.
  4. If necessary perform the Repair procedure refer to para 2-5.3.g.
  5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5.4 Articulation Section Floor

- **Reference Information.**
  1. Tools / Equipment.
     - MBTA Overhaul Standard Tools Kit.
  2. Material (Not Applicable).
- **Procedure.**

  To perform Articulation Section Floor Overhaul, proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Inspect rubber floor and moldings for cracks and correct installation.
  3. Inspect rubber floor for free of indentations, particularly on circular moldings.
  4. If necessary perform the Repair procedure refer to para 2-5.4.g.
  5. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5.5 Upper Linkage

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To perform Upper Linkage Overhaul proceed as follows:

  1. Set the Vehicle in safety condition in accordance with MBTA Overhaul Regulations.
  2. Perform Upper Linkage Assy Disassembly procedure (Refer to para 2-5.5.d).
  3. Inspect for damage, worn / deformation the following items:
     a. Mounting Supports.
     b. Connecting Rods.
     c. Saddle.
     d. Pivot Pin.
     e. Mounting Hardware.
  4. Replace sealing rings, safety plates and spherical bushings.
  5. Replace other damaged components.
  6. If necessary perform the Repair procedure refer to para 2-4.5.g.
  7. Overhaul results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

2-6.5.6 Roof Traction Cable System

- **Reference Information.**
  1. Tools / Equipment (Not Applicable).
  2. Material (Not Applicable).
- **Procedure.**

  To Inspect Roof Traction Cable System Components, proceed as follows:

  1. Inspect for damage, worn / deformation the following items:
     a. Mounting Supports.
     b. Traction Cables.
     c. Springs.
     d. Arms.
     e. Base Plate.
     f. Brackets / holders.
     g. Mounting Hardware.
  2. Damaged components should be replaced.
  3. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

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